National Science and Technology Center

Fiscal Year 2002 Annual Report

U.S. Department of the Interior
Bureau of Land Management

applying current and

accurate science and technology to

support land and resource

management decisions

—National Science and Technology Center

Copies of this report may be requested from: Bureau of Land Management, National Science and Technology Center, P.O. Box 25047, Denver, CO 80225-0047. Phone: 303-236-1601.

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National Science and Technology Center

Fiscal Year 2002 Annual Report

By

National Science and Technology Center Leadership Team

U.S. Department of the Interior
Bureau of Land Management
December 2002

National Science and Technology Center

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Contents

The Director's Message

I am pleased to share with you the Fiscal Year 2002 Annual Report for the National Science and Technology Center. Again this year, we have selected certain projects that highlight the support we have provided to the many field offices, National Centers, and Headquarters. The mission of our organization, which is made up of three Divisions and one Staff, seeks to focus on what we believe is our core mission: providing unique or senior technical expertise to field offices, investigating and prototyping technology applications, and assisting the field in acquiring the needed science to address management issues.

During the year, we were host to several individuals who joined our staff as interns from various colleges and universities. The opportunity to have interns work with us provides an environment that is stimulating to our entire staff. We have made some of our staff available for assignments to other offices within the Department of the Interior. These assignments provide a new "view" for our participants and allow them to return to our Center with a perspective that enables us to focus on our mission. Finally, our staff continues to be active in many professional activities. Participation in activities outside the Center allows our professionals to be recognized for the expertise that they bring—individually and collectively—to the Bureau.

We have met the challenges that have been placed before us, both organizationally and technically. We continue to solidify our role in the Bureau through a solid track record of providing quality products and services, on time and within budget. We have been successful in promoting the use of science in public land management through our technical assistance to the field and by building partnerships with our various science providers. We look forward to continuing to build on our previous successes next year and into the future.

Thank you for your support as we continue to move toward being a significant source of scientific information and technical assistance to our many customers. We value your feedback, and we welcome present and potential customers to work with the Center to keep us on a productive track.

Lee Barkow

Lee Barkow, Director
National Science and Technology Center

Supporting Land and Resource Management Decisions

The Bureau of Land Management's (Bureau) National Science and Technology Center (Center) provides a broad spectrum of services in areas such as physical, biological, and social science assessments; architecture and engineering support; library assistance; mapping science; photo imaging; geographic information systems applications; and publications support. The staff provides synthesized scientific information for application to specific management or resource issues, assesses the synthesized information and provides insights into available data formats and technologies, identifies current technologies or developing applications, and identifies and develops partnerships with organizations and institutions that can provide scientific services and expertise.

Architecture and Engineering: Designing a Better Infrastructure

The staff of the Center provides a full range of architectural and engineering (A/E) services, from consulting on technical engineering matters to coordinating or conducting planning and design services for major building construction. The staff encompasses a full cadre of architectural and engineering professionals. Positions within the Center include architects; a landscape architect; construction and project managers; civil, environmental, structural, electrical, and mechanical engineers; and an engineering technician. The Center received about 100 requests for A/E services in Fiscal Year (FY) 2002. These requests ranged from minor technical reviews to the development of final plans and specifications for major visitor centers. The Center provides technical, architectural, and engineering program support for Bureauwide activities and was active in value engineering; sustainability and energy conservation; and seismic, dam, and bridge safety. In addition to providing architectural and engineering support to its State customers, the Center provides technical, architectural, and engineering program support for the Washington Office and the Office of Fire and Aviation. Highlights of work accomplished in FY 2002 follow:

National Architectural and Engineering Program Support (Bureauwide)

Bureauwide activities over the past year included advocating, instructing, and incorporating sustainable design practices and energy conservation into structural designs; conducting value engineering studies; coordinating seismic program activities; providing technical support for the dam safety program; coordinating facility condition assessment program activities; and managing national A/E contracts and Interagency Agreements.

Sustainable Design Practices and Energy Conservation. The Center has placed a greater internal emphasis on the incorporation of sustainable engineering design practices into Bureau facilities in FY 2002. In March 2002, an off-site workshop was held to address the complex issues that surround sustainability as it relates to design and construction of Bureau facilities. In addition to lectures and discussion topics related to environmentally sound building, energy conservation, reduction of effects on natural systems, and other aspects of sustainability, several ongoing planning and design projects were evaluated to suggest ways for enhancing their attributes in these areas. Many of these ideas have already been implemented, such as the Leadership in Energy and Environmental Design (LEED) certification and wind power generation aspects of the Rawlins Field Office design.

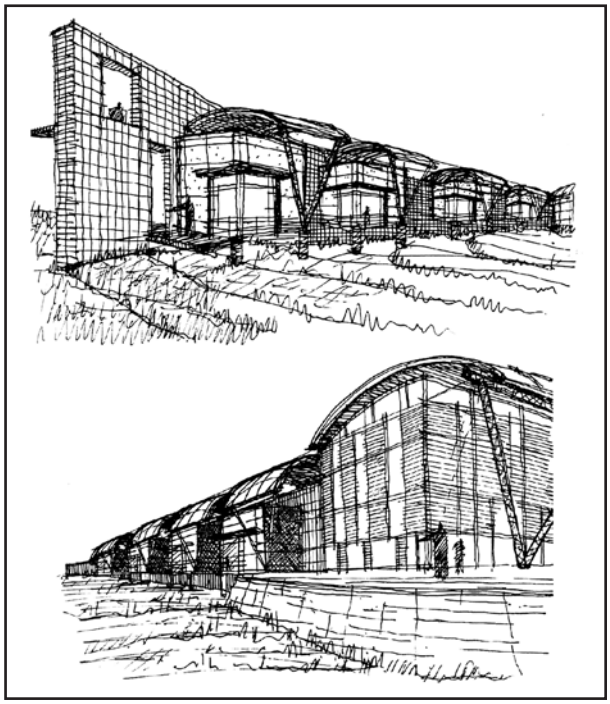
Center staff continued to serve in a lead role in the Bureau's Energy Program. The Center staff prepares annual and semiannual energy reports, evaluates records and usage to determine where opportunities exist for reduced energy consumption, and participates on the Department of Interior Energy Conservation Committee.

Client and office: Linda Force, Washington Office
NSTC project lead: Pat Fleming

Value Engineering. In FY 2002, the Center continued to provide in-house "value engineering" services to the Bureau. The Center established multidisciplinary technical teams to provide cost-effective and timely value engineering reviews on most Bureau construction. Department of the Interior policy requires that any construction project of more than $1 million be analyzed to ensure that the government is getting its best value. In FY 2002, the Center conducted five such studies: Battle Mountain Air Tanker Base (ATB), Nevada; Escalante Science Center, Utah; Rawlings Field Office, Wyoming; and Craig Field Office building and Grand Junction ATB, both in Colorado.

Value analysis is not a critical review, constructability review, or cost-cutting exercise. It is a problem-solving and decision-making technique that bypasses learned responses to produce alternative solutions that achieve all required functions of the original design at the least cost over the life of the structure. It is a team effort that follows an established, organized job plan and problem identification format that promotes objectivity and stimulates creativity. When the value analysis methodology is followed precisely, beneficial results are ensured.

Client and office: Linda Force, Washington Office
NSTC project lead: Scott Hansen



Seismic Safety Program. Overall program coordination and management of an Interagency Agreement with the Bureau of Reclamation to accomplish rapid visual screening (RVS) and detailed evaluations and inspection of buildings throughout the agency were primary efforts of Center staff in FY 2002. Seismic Program FY 2002 activities included the completion of RVSs of 81 leased buildings, the completion of a preliminary evaluation of the Fillmore Field Office building, the completion of a final RVS of Bureau-owned buildings, and the completion of replacement designs for two high-priority buildings (Caliente Field Station and the Rock Springs Field Office) needing seismic rehabilitation.

Client and office: Linda Force, Washington Office
NSTC project lead: Elizabeth Smith

Dam Safety Program. Center staff provided program support services and facilitation to generate and oversee an Interagency Agreement with the Bureau of Reclamation and a Task Order with national A/E contracts for inspections, risk profiles, condition assessments, and peer reviews of dam designs nationally. In addition, the Center assisted the Washington Office in coordinating and applying consistency, standardization, and organization in preparation for the Department of the Interior peer review.

Client and office: Linda Force, Washington Office
NSTC project lead: Gary Fisk

Bridge Safety Inspections. The Center continued its support of the Bureau's cyclic bridge inspection program, providing inspection services to California, Idaho, Montana, and Wyoming in FY 2002. In FY 2002, about 30 bridges were inspected and documentation was provided in accordance with Federal requirements for biannual bridge inspections.

Client and office: Greg Bergum, Montana State Office; Gary Hunter, Idaho State Office; Jim Kor, Wyoming State Office; Merlin McDaniel, California State Office
NSTC project lead: Keith Christiansen

Condition Assessments. In FY 2002, the Center was allocated about $2 million to administer national A/E contracts for the completion of condition assessments of recreation sites, administrative sites, roads, and dams. Condition assessments are instrumental in providing a consistent baseline of the condition of Bureau assets. Condition assessments are presently being used to identify asset value and annual and deferred maintenance needs, which will enable the Bureau to better plan construction activities in the Five-Year Deferred Maintenance–Capital Improvement Plan.

Client and office: Elliot Ng, Washington Office
NSTC project lead: Scott Hansen

Nationwide Indefinite Delivery–Indefinite Quantity Contracts. The Center continues to expand its services to the Bureau with project management of A/E contract services. The management services it provides range from a brief project review to assuming full responsibility for design and construction management. The level of support provided depends on customer needs and project requirements.

In FY 2002, the Center managed five national Indefinite Delivery–Indefinite Quantity (IDIQ) contracts for professional A/E services, awarding more than $5 million in contracts. Together, these contracts provide the Bureau with more than $30 million in A/E contract capabilities.

Client and office: Bernie Hyde, Washington Office
NSTC project lead: Scott Hansen

Architectural and Engineering Support for the Office of Fire and Aviation (California, Idaho, Nevada)

The Center continued to work closely with the Office of Fire and Aviation and at the National Interagency Fire Center (NIFC) to provide planning, design, and construction management services in support of their mission in the construction program.

Standard Fire Facility Design. The Center continues to work closely with the Office of Fire and Aviation in developing design standards for fire facilities. In a June 2002 meeting with the new Fire Facility Coordinator, it was agreed to develop a Fire Facility Steering Committee to oversee the development of Standard Facility Designs. The Steering Committee will be composed of experts in the Fire and Engineering communities of the Bureau and will work closely with other agencies to generate design standards that can be used by the Bureau and other agencies with similar missions.

In December 2001, a design presentation and workshop was held in the office of the Center's A/E consultant, Otak, Inc., of Portland, Oregon, to present conceptual design alternatives for the Prototype Engine Barn and Operations Building. The design alternatives addressed a diverse set of needs for these facilities. The schematic design is pending further review and approval by the Fire Facility Coordinator and Fire Facility Steering Committee.

Client and office: Terry O'Connell, Office of Fire and Aviation, Idaho
NSTC project lead: Russ Virgin

National Interagency Fire Center Sewer. A Bureau Compliance Assessment, Safety, Health, and Environment audit of the NIFC site identified storm and sanitary sewer compliance issues. Center staff contracted for an inventory and action plan for the storm and sanitary sewer compliance, which was completed in August 2002. A/E services are being contracted to provide construction documents for implementing the recommendations of the action plan.

Client and office: Marty Nelson, National Interagency Fire Center, Idaho
NSTC project lead: Russ Virgin

Battle Mountain Air Tanker Base Construction Documents. The final design was completed for Phase I of the renovation to the Battle Mountain Air Tanker Base (ATB). Because of the size and cost of this project, the design package was divided into three phases of construction. The first phase of this project consists of the following features: improved circulation patterns for pedestrians, cars, trucks, and aircraft; increased parking and loading areas for aircraft; retardant handling and mixing areas; retardant distribution and collection systems; and a storm water collection system, including a detention pond.

Phases II and III will consist of the rest of the construction, including an ATB operations building, heli-pad, parking area, pilot lounge, and other miscellaneous site work.

Client and office: Dave Davis, Nevada State Office
NSTC project lead: Bob Hart

Design–Build Contracts for Three Fire Stations. This project began in response to a request in April from the Las Vegas Field Office. Although funding was available to build three fire stations, it had to be obligated in FY 2002. Because of insufficient time to complete the traditional sealed-bid process, the Center and client decided on a design–build contract. A disadvantaged small-business firm (Maxfour, Inc.) specializing in design–build construction contracts was contacted and a request for a proposal was issued. The Standard Fire Station (crew quarters), designed in-house, was used, requiring only minor additional site-specific design by Maxfour. The contract for the entire project was negotiated and awarded. The project includes all three fire stations, a parking area, and miscellaneous site work; it is scheduled for completion in March 2003.

Client and office: Kim Schuett, Nevada State Office
NSTC project lead: Russ Virgin

Topaz and Mono Fire Stations. Through a National Park Service contract for design services, the Center completed contract documents for two fire structures in northeastern California. These projects were based on a standard fire station design unique to the Bureau in California. As the contract managers for this undertaking, Center staff served as technical liaisons between the State Offices and the contractor to provide a product responding to the particular needs of this client.

Client and office: Merlin McDaniel, California State Office
NSTC project lead: Tom Busch

Planning, Design, and Construction Management Support (Arizona, California, Colorado, Idaho, Montana, Nevada, Utah, Virginia, Wyoming)

Cannonville Visitor Center Construction Management. The Center staff was responsible for the coordination of construction activities at the recently completed $1.1 million Cannonville Visitor Center at Grand Staircase–Escalante National Monument (GSENM). This was the first major project undertaken by Center construction management staff. This project was completed ahead of schedule and with a minimum number of change orders, which was attributable to an efficient team (State of Utah personnel, GSENM staff, contractors, and the Center construction manager). The construction management program was established at the Center in FY 2001 to ensure coordination between facility design and construction activities by providing constructability reviews, Contracting Officer's Representative (COR) services, on-site daily inspection (through A/E contract), and comprehensive technical assistance to better serve its customers.

Client and office: Casey Matthews, Utah State Office
NSTC project lead: Russ Virgin

Rock Springs Field Office. Designed through one of the Center's national IDIQ contracts, this project provides for much-needed improvements at the Bureau's Rock Springs administrative site. The A/E project management was provided by Center staff, and the drawings and specifications were completed by the contractor on time and within budget. Favorable bids were received and the project is now under construction.

Client and office: Jim Kor, Wyoming State Office
NSTC project lead: Frank Ciesel

Craig Field Office. The Center served as project manager and A/E COR for the design of the Craig Field Office. Designed through one of the Center's national IDIQ contracts, this project provides the contract documents for a new, 13,000-square-foot office building, landscaping, and a parking area. Upon completion of the new building, the existing complex, which posed severe safety and health hazards, will be demolished.

Client and office: Stuart Cox, Colorado State Office
NSTC project lead: Frank Ciesel

Caliente Field Station Redevelopment. The design of a new field station and fire facility was completed for bidding in FY 2002. The field station consisted of an administrative office building, a fire crew quarters, shop building, engine garage, ware yard, and miscellaneous site improvements. The project was completed with in-house design staff and was one of the highest priorities in the State of Nevada. The project will provide improved facilities for both administrative and fire operations.

Client and office: Jon Ekstrand, Nevada State Office; Sue Perkins, Ely (Nevada) Field Office; Mike Fewell, Caliente (Nevada) Field Station
NSTC project participants: Tom Busch (lead), Pat Fleming, Phillip Luu, Ernie Parrott, Mark Pritchett, Elizabeth Smith, Chanh Tran, Young Yu

Rawlins Field Office. The Center served as project manager and A/E COR for the design of the Rawlins Field Office, which provided the contract documents

for a new, 30,000-square-foot office building, landscaping, and public and employee parking areas. The new building will provide accessible, code-compliant space and will include many sustainable-design, environmentally sound building and energy conservation features, such as on-site wind turbine generators. The Center contracted with A/E professionals to perform a LEED evaluation, which encourages and guides a collaborative, integrated design and construction process. Upon completion of the new, LEED-certified structure, the two existing office buildings will be demolished.

Client and office: Jim Kor, Wyoming State Office
NSTC project lead: Frank Ciesel

Pariette Dam. An engineering analysis was performed that included appraisal and construction cost estimates of alternatives for increasing the available storage above Pariette Dam. The dam, near Vernal, Utah, has become inadequate for protecting downstream development and habitat against flooding because of upstream siltation, which has occurred since its construction. The preparation of construction contract documents for the preferred alternative is under way.

Client and office: Jerry Kenczka, Vernal (Utah) Field Office
NSTC project lead: Gary Fisk

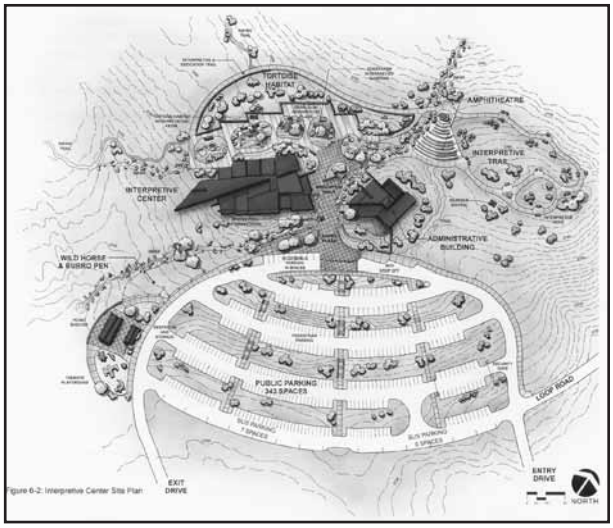
Anasazi Heritage Center Heating, Ventilating, and Air Conditioning Replacement. The Center was involved in preparing a major heating, ventilating, and air conditioning (HVAC) and humidity control system for the Anasazi Heritage Center, Colorado. The new HVAC system provides essential humidity and temperature controls in the museum, which are critical in protecting ancient Anasazi artifacts housed in the museum. The design was completed in January 2002, and the project was advertised for construction in summer 2002. The Center conducted an on-site prebid conference with prospective construction contractors who are interested in bidding on the project. Construction began in September, with completion anticipated in early 2003.

Client and office: Stuart Cox, Colorado State Office
NSTC project participants: Young Yu (lead), Phillip Luu, Chanh Tran

Pompey's Pillar Visitor Center Schematic Design. The development of a visitor center for the Lewis and Clark site east of Billings, Montana, continues to be a significant commitment for the Center. The schematic design was completed and approved in fall 2002. Work continues with the preparation of final design documents for a planned start of construction in late 2003.

Client and office: Sandy Brooks, Montana State Office
NSTC project lead: Tom Busch

Red Rock National Conservation Area. As one of the Bureau's oldest visitor sites, the Red Rock Visitor Center (see also page 10) is in need of a major rehabilitation. On the basis of recent and projected visitation numbers, it was found that the facility is undersized for meeting present and future needs. A revision of the master plan for the visitor center was developed, along with a transportation study of the scenic loop road, to determine how best to plan for the conservation area's future needs. In conjunction with the design of a new education center, the Center is also involved in the early planning of an



environmental education and Wild Horse and Burro (WHB) Center at the Oliver Ranch site within the Red Rock National Conservation Area.

Client and office: Red Rock National Conservation Area, Nevada
NSTC project participants: Tom Busch (lead), Pat Fleming, Bob Hart, Mark Pritchett
Collaborators: Outside Las Vegas, Yosemite National Institute, National Park Service

Meadowood Farm Water Line Extension. Design plans and specifications were completed for water lines and associated items to connect to the Fairfax County Water Authority's system and provide potable water and fire protection for the stable, office, and two residences at Meadowood Farm, a recently acquired property south of Washington, D.C., near Lorton, Virginia (see also page 12). This construction will provide drinking water to the site, which had not been available since the wells at the site had become contaminated, and it will allow for structural fire protection in accordance with modern standards.

Client and Office: Charles Bush, Eastern States Office
NSTC project lead: Pat Fleming

Water Well, La Posa Long-Term Visitor Area. Construction contract documents were prepared for constructing a new water well, about 1,000 feet deep, to serve a planned new sanitary station in the Long-Term Visitor Area (LTVA) near Quartzsite, Arizona. The LTVA is primarily used by recreational vehicles during the cooler months, with as many as 2,000 or more in the area at one time. There are no utilities available to these visitors. The well will serve a recreational vehicle (RV) water fill station, as well as maintenance activities at a planned RV wastewater dump station.

Client and office: Paul Chamberlin, Yuma (Arizona) Field Office
NSTC project lead: Pat Fleming

Cartography: Maps for Managers and the Public

The staff of the Center is responsible for the design and production of a wide variety of mapping products, databases, and services that are used by all Bureau offices to administer Bureau-managed resources and by the general public for commercial and recreational pursuits. Highlights of work accomplished in FY 2002 follow:

Development of Standard International Symbology (Bureauwide)

Standard International Symbols have been developed by the Center for use with all Bureau maps, publications, and signs. These International Symbols represent available facilities, services, area access, and recreational opportunities on public lands, National Forests, Parks, and Monuments. These standardized symbols are the result of a multiyear project to resolve inconsistencies throughout the Bureau with printed products and signage located on the ground. Center cartographers and printing specialists had observed the inconsistent use of International Symbols and their definitions throughout many Bureau office products and signs. Better communication practices throughout the Bureau and with the general public are essential; the consistent use of International Symbols is critical to achieving that goal. One hundred fifty-eight standardized symbols have now been developed in True Type fonts and converted into symbol-sets for use with ArcInfo, ArcView, and Adobe software applications. These symbol-sets are presently available for downloading at ***http://www.blm.gov/nstc/mapstandards/***.

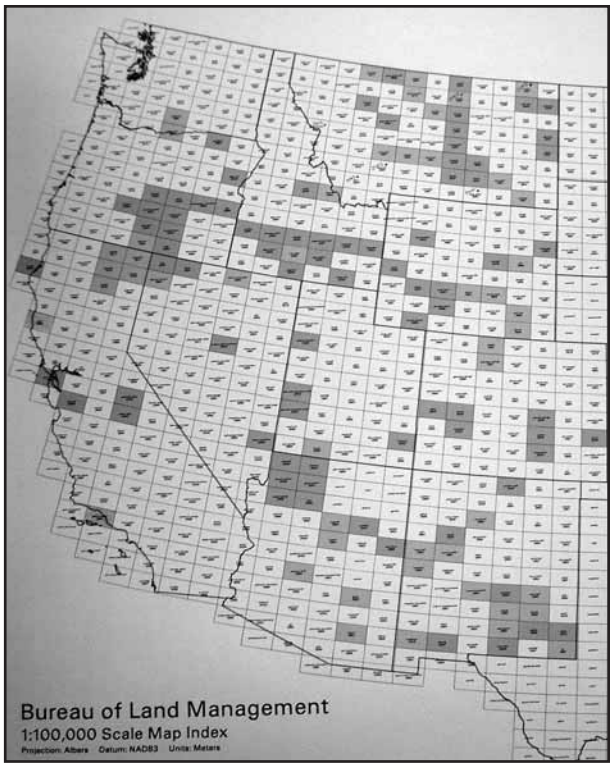
Because both traditionally and digitally produced maps are often combined with recreational brochures to create cost-effective (pages printed on both sides) publications, the successful merging of products will be dependent on the widespread and standard use of symbology throughout government organizations.

Client and Office: Ed Harne, Washington Office
NSTC project participants: Bill Jackson (lead), Peter Doran, Chris Smith, Mary Beth Stultz
Collaborators: Lee Campbell, National Business Center, Amy Galprin, Washington Office

Automation of the Bureau's 100K Map Series (Bureauwide)

Since the Bureau began publishing the 1:100,000-scale (100K) Surface Management Status map series in the 1970s, the maps have become the most popular intermediate-scale maps ever published by a Federal agency. This series remains the only map series produced by the Federal government that shows surface ownership for the entire Western United States. In 1999, at the request of State Directors and Field Office Managers throughout the Bureau, the Center began automating the 100K map series by using ArcInfo and ArcMacro software. The automated maps were designed to look like the traditional 100K map series while maintaining the same national map accuracy standards of the traditional map. More than 150 of a total of 705 (21%) of the Bureau's 100K maps have now been digitally revised and printed, or are presently in the production process.

Automation of the Bureau's 100K map series has greatly reduced the time and cost of map compilation and produces a better looking, more consistent, and more accurate map through the use of Geographic Coordinate Data Base data. Maps are now produced at a fraction of what they once cost and are completed in days rather than the weeks or months required when using the traditional manual compilation process. As an added benefit, the databases created by the automation process also lend themselves to other applications. For example, some or all of the data themes could be used to support land use planning, special mapping applications (such as delineating recreational opportunities and off-highway vehicle access), and geographic information systems applications. The digital data can also be served on Bureau Web pages for other uses.



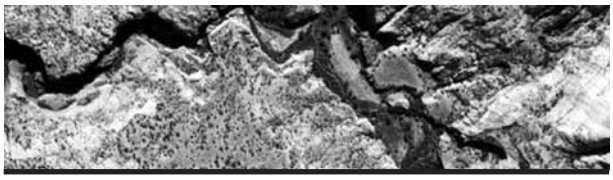
Client and office: Bob Bewley, New Mexico State Office; Judy Briney, Oregon State Office; Carol Burger, Arizona State Office; Corla DeBar, Montana State Office; Kevin Huffstutler, Colorado State Office; Patrick Madigan, Wyoming State Office; Cindy Lou McDonald, Idaho State Office; Mark O'Brian, Nevada State Office; Dan Webb, Utah State Office
NSTC project participants: Bill Jackson (lead), Neal Anderson, Don DeCicco, Susan Derr, Mary Ann Guinea, Chris Smith

Intra-agency Map Printing Agreement (Bureauwide)

The Center maintains an Intra-agency Map Printing Agreement with the U.S. Geological Survey (USGS) National Mapping Division for the printing and distribution of Bureau map products. The Bureau's mapping program is a key component of its principles of ecosystem management, created to meet the resource management needs of the Bureau. The agreement includes the printing of the Bureau's

1:100,000-scale surface and minerals management map series and other thematic maps as identified by the Bureau. All use of this agreement must be coordinated through the Center.

Client and office: Dave Wilson, Arizona State Office; Ken Schauer, Colorado State Office; Cindy Lou McDonald, Idaho State Office; Corla DeBar, Montana State Office; Mark O'Brian, Nevada State Office; Bob Bewley, New Mexico State Office; Judy Briney, Oregon State Office; Dan Webb, Utah State Office; and Patrick Madigan, Wyoming State Office
NSTC project participant: Bill Jackson



Photogrammetry: A Closer Look at Resource Issues

The staff of the Center provides technical support to Bureau offices in using aerial photography and digital images to map and measure features associated with Bureau-managed resources. This support includes the ability to specify and monitor aerial acquisitions, prescribe the required control, perform the analyses to meet specific customer needs, and manage the archive of Bureau-owned aerial photography. Center personnel also provide photogrammetric support for deferred maintenance requirements. Highlights of work accomplished in FY 2002 follow:

Photogrammetric Site Plan Mapping (Arizona, Colorado, Montana, Utah)

Photogrammetric site plans are extremely detailed and accurate maps of an area of interest that are made for a specific purpose. Because of the detailed nature of these types of maps, they normally do not cover wide areas. Photogrammetric site plans can portray both topographic and planimetric details of an area and can be customized to show features of interest to the client for that specific site. Depending on the scale of photography used, a typical site plan can portray topography at as little as 1-foot contour intervals. This contrasts with the normal 20–40-foot contour interval found on most standard USGS topographic maps. This means that features the size of sign posts, camp fire rings, culverts, and other similar-sized objects can be seen on the photos and portrayed on the maps.

These types of maps are used by engineers, landscape architects, and other resource specialists for many purposes. One use is to inventory an area to see what and exactly where things are. A photogrammetric site plan can also be used for the overall planning of site improvements at the conceptual phase of design and can be used for detailed construction planning.

The possible uses for site plans are limited only by the needs of clients for detailed information about the ground and related features at their job site. Many photogrammetric site plans have been prepared for such varied uses as planning recreational facilities, inventorying mountain top telecommunication sites, and planning the reclamation of Hazmat (hazardous materials) sites. These types of maps have also been used for building and grounds inventory and improvements, planning road reconstruction or realignment, and for dam reclamation and hydrographic reengineering.

Project: Lookout Mountain and Monument Peak Telecommunication Site Mapping
Client and office: Gordon Gardunio, Grand Junction (Colorado) Field Office
NSTC project participants: Dave Kett (lead), Paul Graves

Project: Ute Ulay Hazmat Area Site Plan
Client and office: Barbara Hite, Colorado State Office
NSTC project lead: Nancy Russell

Project: Crescent Wash Dam Topographic Mapping
Client and office: John Lewis, Moab (Utah) Field Office
NSTC project lead: Mike Marchase

Project: Tenmile Wash Topographic Mapping
Client and office: John Lewis, Moab (Utah) Field Office
NSTC project lead: Paul Graves

Project: Montrose Field Office Engineering Design Site Plan
Client and office: Gordon Gardunio, Grand Junction (Colorado) Field Office
NSTC project lead: Russ Jackson

Project: Lake Havasu Campsite Mapping
Client and office: Bill Parry, Lake Havasu (Arizona) Field Office
NSTC project participants: Dave Kett (lead), Paul Graves

Project: Decision Point Recreation Site Map
Client and office: Carl Patten, Lewistown (Montana) Field Office
NSTC project lead: Nancy Russell

Project: Transfer Trail Road Realignment Topographic Map
Client and office: Gordon Gardunio, Grand Junction (Colorado) Field Office
NSTC project lead: Mike Marchase

Project: White House Road and Campground Site Map
Client and office: Bryce Lloyd, Grand Staircase–Escalante National Monument, Utah
NSTC project lead: Dave Kett

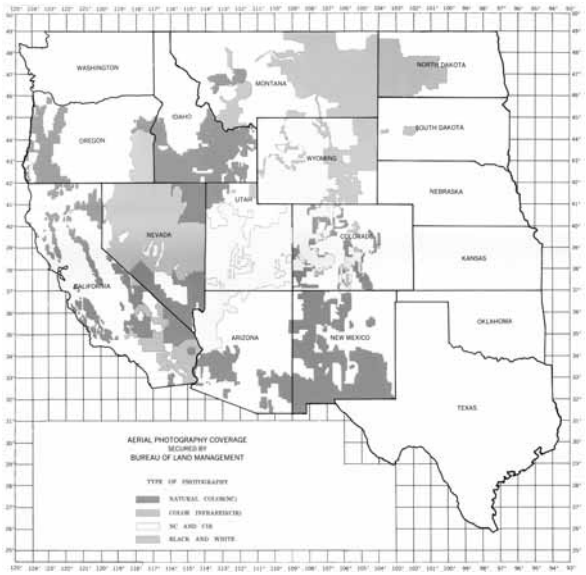
Project: Sundance Lodge Site Map
Client and office: Steve Albright, Montana State Office
NSTC project lead: Mike Marchase

Red Rock Canyon National Conservation Area Transportation Plan and Site Evaluation Study (Nevada)

Red Rock Canyon National Conservation Area (NCA) is managed by the Bureau (see also page 6). Located about 10 miles west of Las Vegas, Nevada, this area is experiencing a tremendous increase in visitation. It is estimated that 90% of the visitors to the NCA stop at the visitor center and travel the scenic drive. The scenic drive was engineered and built in 1984 and was not designed to accommodate this increase in usage. Because of this situation, Bureau personnel decided that the scenic drive, along with its associated parking network, needed to be redesigned to better accommodate the expanding pressure on area.

The Center was asked to provide base elevation data to EDAW, its contract landscape and architectural firm. The information provided enabled the contractor to provide an analysis and recommendations for the area and was used as an integral component in the final report furnished to the Bureau. Products provided included digital files containing topographic data of the individual sites (13) and scanned digital images of the aerial photography.

Client and office: Red Rock Canyon National Conservation Area
NSTC project participants:
Michael Marchase (lead), Paul Graves, Dave Kett
Collaborators: Las Vegas Field Office, EDAW (landscape and architectural firm)



Off-highway Vehicle Route Inventory Mapping (Arizona, Colorado, Nevada)

Off-highway vehicle (OHV) activity on public lands has greatly increased in the last several years. The Bureau of Land Management has made an effort to focus the agency's resources on the development of a land use plan to address issues associated with the increased population growth near public lands. Off-highway vehicle routes are now a major part of all

future planning activities. The Center was asked by Bureau field offices for help in updating their transportation base layers quickly and accurately, with an emphasis on OHV routes. This assistance comes in the form of photogrammetric compilation and on-screen digitizing of roads, highways, trails, rail lines, airstrips, footpaths, and other transportation features, and in the presentation of on-site workshops geared at instructing Bureau field offices in this process.

The field offices are already working closely with Federal, State, and local government agencies to produce a seamless base map that will be used in land use planning. The Center has been working alongside these offices in a continued effort to help meet the Bureau's National Management Strategy for Motorized Off-highway Vehicle Use on Public Lands.

Client and office: Bill Gibson, Phoenix (Arizona) Field Office
NSTC project lead: Paul Graves
Collaborator: Garret Topham, Phoenix (Arizona) Field Office

Client and office: Dean Kinerson, Carson City (Nevada) Field Office
NSTC project lead: Nancy Russell

Client and office: John Arkins, Kremmling (Colorado) Field Office
NSTC project lead: Nancy Russell

Aerial Photography Acquisition Planning (Arizona, California, Idaho New Mexico, Utah)

The Center serves as the technical focal point for Bureau aerial photography planning by providing support to Bureau State Offices and field offices in the acquisition of new aerial photography. This support includes determining requirements, estimating costs, assembling specification bid packages, administering contracts, and performing inspections. FY 2002 photography acquired through this process included resource block (multiple use) and special use such as riparian and photogrammetric projects.

Clients and offices: Craig Beck, Ridgecrest (California) Field Office; Julie Casper, Utah State Office; Scott Debock, Yuma (Arizona) Field Office; Bill Diage, Challis (Idaho) Field Office; Andrew Dubrasky, Cedar City (Utah) Field Office; Neil Hamada and Chris Knauf, El Centro (California) Field Office; David Kiel, Arizona Strip (Utah) Field Office; Elizabeth Peck, New Mexico State Office; Deena Teel and Dan Kotansky, Upper Snake River (Idaho) Field Office; Dale Wirth, Farmington (New Mexico) Field Office
NSTC project lead: Lawrence Cunningham

Aerial Photography Reproduction and Archive (Bureauwide)

The Center maintains an aerial photography archive—containing about 451,000 frames of photography—that covers land managed by the Bureau. The staff provides assistance to Bureau offices and the public in researching the availability of historical aerial coverage and obtaining copies of Bureau aerial photography. This service has been provided to a large cross-section of the public including conservation groups, lumber companies, hydrologists, geologists, law enforcement personnel, hunters, and individuals. Photography contained in the archive covers the last 25 years, making it an invaluable resource for tracking changes in the land caused by humans and nature. An in-house reproduction lab prints both color and black-and-white photography from the film stored in the archive. A certification of authenticity can be provided for any product created from original film, as required to support litigation activities.

Client and office: Bureauwide and general public
NSTC participants: Constance Slusser, Betty Wilson

National Digital Elevation Program Technical Subcommittee (Bureauwide)

The National Digital Elevation Program (NDEP) was established to promote the exchange of accurate digital land elevation data among government, private, and nonprofit sectors and the academic community and to establish standards and guidance that will benefit all users. The NDEP is composed of agencies from the Department of the Interior, Commerce, and Agriculture, as well as the National Imagery and Mapping Agency, National Aeronautics and Space Administration, U.S. Army Corp of Engineers, and the Federal Emergency Management Agency. The NDEP also includes representation from State governments through the National States Geographic Information Council.

The NDEP is organized into a Steering Committee, Project Subcommittee, and a Technical Subcommittee. The Technical Subcommittee is presently working to provide to the member agencies—as well as to nonmember agencies—guidelines and recommendations for acquiring digital elevation data in various forms, which will provide individual agencies flexible options that can be used to establish standards for their own organizations.

Client and office: Ed Harne, Washington Office
NSTC project lead: Russell Jackson

The National Digital Orthophoto Program Technical Subcommittee (Bureauwide)

The National Digital Orthophoto Program (NDOP) was established to promote the cooperative production of digital orthophotoquads (DOQ) among participating Federal agencies. Over the years, the focus has broadened to include orthophotography acquired by State and local governments. A primary goal of this program is to ensure the availability of public domain digital orthophotography. The NDOP is organized into a Steering Committee, a Project Subcommittee, and a Technical Subcommittee. The NDOP Technical Committee was involved with the following activities in FY 2002: Identified areas where DOQ contract vendors may mosaic and tone-balance orthophotos to determine potential cost differentials for County mosaicking; coordinated with vendors on potential pilot project areas; addressed the NDOP header record specification versus other header specification or metadata that meet users' needs; researched seamless data access methodology; and investigated and researched different methods of inspecting State high-resolution orthophotos, including how to perform independent verifications and how to retain the data for public dissemination.

Client and office: Ed Harne, Washington Office
NSTC project participants: Russell Jackson (lead), Debra Dinville
Collaborator: Carol Giffin, U.S. Geological Survey

Science Investigations: What's New in Science

The staff of the Center conducts science investigations in support of land and resource management decisions. These scientific investigations entail working with research institutions or other agencies and assimilating existing information or using or examining untried techniques. Personnel are involved in identifying, assessing, and synthesizing information relevant to Bureau management issues identified by field offices, State Offices, the Washington Office, and others. Center disciplines include geology, wildlife biology, plant ecology, rangeland science, land use planning, outdoor recreation planning, wildlife diseases, and other natural resource sciences. Center personnel were also active in teaching environmental sciences, writing publications, and making presentations on a variety of subjects. Highlights of the work accomplished in FY 2002 follow:

Meadowood Farm (Eastern States)

The Bureau of Land Management acquired Meadowood Farm (see also page 7) in a land exchange in October 2001. The site is located in Lorton, Virginia, about 18 miles southwest of Washington, D.C. Historically, the private property

had been used for horse boarding and some trail riding. The Bureau is presently developing a long-term land use plan for the unit. The plan will attempt to strike a balance in the Bureau's Wild Horse and Burro program, appropriate recreation opportunities, and environmental education, while protecting the fragile upland soil and vegetation and the moist wetlands on and around the site.

A Center soils scientist examined the soil conditions on Meadowood Farm and made recommendations regarding the types of activities that those soils can sustain. The effects of recreation (including the potential for social interactions) were analyzed, recommendations for appropriate activities were made, and the recommended recreation activities were evaluated by a Center outdoor recreation planner.

Client and office: Charles Bush, Eastern States Office
NSTC project participants: Vicki Josupait, Bill Ypsilantis

Northern Great Plains Analysis (Bureauwide)

Multiple-species habitat conservation efforts by Bureau managers could be improved by better understanding the management of Bureau-administered public lands and surrounding areas over multi-State regions. The Bureau's present multiple-species habitat conservation strategy strives to incorporate into the process existing information and other conservation strategies or plans or recovery plans. The purpose of this project is to promote a timely and cost-effective analysis, interpretation, and incorporation of available resource information while providing a regional context for the Bureau's multiple-species habitat conservation, strategic planning, and land use planning efforts.

The Northern Great Plains Analysis Project is intended to develop an improved framework for Bureau regional analysis activities, with particular emphasis on complementing and supporting future multiple-species habitat conservation activities. The results of the project are applicable Bureauwide and are expected to enhance linkages between program managers, field managers, and land use planners at all organizational levels.

In FY 2002, technical support was supplied to Montana and Wyoming, preliminary information was gathered, coordination meetings were held, and tours were conducted to ascertain the availability of data and future needs. The initial phase of the project is designed to be a prototype that will produce a first-generation demonstration of the new regional analysis framework (methodology) in the Northern Great Plains area. The first generation product will be reviewed, critiqued, and evaluated by specialists and managers from various organizational levels of the Bureau during 2003. Resulting information will be used in 2003–2004 to produce the second-generation product that is intended to represent a model framework for the Bureau to apply in future regional analyses in support of multiple-species and habitat conservation strategies.

Client and office: Cal McCluskey, Washington Office
NSTC project participant: Bruce M. Durtsche

Bureau Legacy Program (Colorado, Idaho, Oregon, Wyoming)

As a result of personnel turnover or changing values, the Bureau may sometimes seem to vary in its approach to land management practices. The Bureau

Legacy Program was developed to provide present field managers and specialists with an opportunity to learn about past land management practices and treatments and to evaluate the results and conditions of those treatments 25 or more years later. In FY 2002, the Program focused on revisiting vegetation and land treatment practices in eastern Oregon and southern Idaho, western Colorado, and central Wyoming. Center staff coordinated field visits and report preparation.

Client and office: Henri Bisson, Washington Office
NSTC project participant: Bruce Van Haveren

Science Applications: Using Science to Manage the Land

The Center adapts, develops, and uses scientific concepts and methods to address resource management concerns. The staff strives to transfer scientific methods and applications to Bureau employees through training, publications, and demonstrations. Center specialists adapt scientific research and technical applications for use in collecting and analyzing information required for land use decisions. Expert knowledge of stream systems, riparian areas, and upland sites is applied to range and forest public lands. During FY 2002, Center staff supported the Bureau's field offices, the National Training Center, and the Washington Office by developing technical guidance documents, supporting Bureau science initiatives, and conducting site-specific consultations. Specialists provided soil, forest, range, riparian, fisheries, hydrology, and stream health assessment expertise and assistance. Services were also provided in groundwater analyses and terrain-geographic modeling. Highlights of work accomplished in FY 2002 follow:

Klamath River Adjudication (Oregon)

In 1994, Congress designated 11 miles of the Klamath River in southwestern Oregon as "scenic" under the National Wild and Scenic Rivers Act. A river is so designated on the basis of selected "outstandingly remarkable values" contained within the river corridor. The Bureau is responsible for the management of this river and its designated values. One of the Klamath River values is the distinctive red band trout (*Oncorhynchus mykiss*). The Klamath River Basin is presently under water rights adjudication; therefore, the healthy red band trout population is dependent on how "available water" is quantified and adjudicated. The Bureau is in the process of filing a Federal Reserve Water Right claim to ensure the continued protection of values associated with this reach of the Klamath River.

In FY 2002, the Center provided technical and scientific expertise in support of the Bureau's water right claim. Center staff provided guidance regarding how to evaluate the flow requirements for the existing fish population. To accomplish this task, a Center hydrologist conducted a detailed review of existing data and recommended application of an existing computer model to assess the flow requirements. Center staff, in cooperation with the U.S. Geological Survey, estimated the physical habitat requirements for the red band trout fishery using an open-channel hydraulic model that simulates flows and related usable habitat areas. The modeled results serve as the basis for the Federal Reserve Water Right claim filed by a Bureau solicitor and the Department of Justice. The water right claim decision is pending in the State of Oregon adjudication process.

Client and office: Larry Frazier, Klamath Falls (Oregon) Field Office
NSTC project participant: Steve Swanson
Collaborator: U.S. Geological Survey

Aquatic Restoration and Enhancement Course (Bureauwide)

The National Training Center (NTC) of the Bureau sponsors several courses in wildlife biology, riparian systems, ecology, and stream hydrology each year. Until this year, the NTC had no active course targeting the aquatic ecology of Bureau-managed streams. Center staff facilitated the development of the Aquatic Restoration and Enhancement Course in FY 2002 to partly fill this need. The course was pilot-tested in Albuquerque in August 2002.

Because the role of Federal land management agencies in wildlife programs is primarily one of habitat management, the course emphasized assessment, restoration, and enhancement of aquatic habitat. Center staff coordinated the course, providing direction, course content, and technical oversight for the creation of instructional materials provided by a contractor. Course products included notebook materials, visual presentations, and class exercises. The course objectives were to enable students to assess aquatic habitat needs, develop specific restoration and enhancement strategies and designs, and monitor aquatic habitat gains. Center staff also provided a course critique to facilitate the development of a revised course package. The course may become a regular wildlife program training session sponsored by the NTC.

Client and office: Russ Krapf, Bureau National Training Center
NSTC project participants: Jim Fogg, Don Prichard, Steve Swanson, Charisse Sydoriak
Collaborators: Tom Wesche, HabiTech (Wyoming); Brett Roper, U.S. Forest Service

Forest Vegetation Information System (Washington Office)

The Forest Vegetation Information System (FORVIS) is an ArcView- and Informix-based system for storage, retrieval, and analysis of vegetation data about Bureau forestlands. The system includes database tables for vegetation attributes and vegetation treatments. System features include data entry, data update, and formatted report options. About 20 Bureau field offices presently have the user interface

programs installed and available for field use. The FORVIS ArcView GIS (geographic information systems) extension, completed this year, links spatial data and vegetation attribute data in the FORVIS database. The extension provides programmed queries and reports that use the vegetation attribute data from the FORVIS database. The Center staff provided expertise on inventory protocols and data management and, working with Washington Office staff, completed a charter for the FORVIS Project Change Management Board that will guide future FORVIS enhancements and modifications.

Client and office: Rick Tholen, Washington Office
NSTC project participants: Susan Goodman, Bill Williams

Soil Biological Communities Web Page (Bureauwide)

The objective of this project was to develop an environmental education and public outreach Web page for fourth- through sixth-grade school children. Completed and made available on the Internet in April 2002, the Web page provides lessons for students 9–11 years old about what soil is and how living components of the soil work together to provide

food for plants and, ultimately, all living things. Different portions of the site are designed to appeal to younger or older students. For example, younger students may enjoy some of the coloring activities, whereas a link will take older students to the Soil Biological Communities Web page, which discusses soil organism functions and processes in greater detail. The Web page is a great example of using technology to help others understand the importance and interdependence of ecosystem parts. Readers can find out how these complex and largely unseen but vital soil communities function by visiting the Web page at ***http://www.blm.gov/nstc/soil/Kids/index.html.***

The Web page makes information accessible through such devices as bulleted text, photos, graphics, and activities. The Web page contains the following modules:

- *Soil Importance* provides a discussion about the functions of soil and why it is an important part of our environment
- *Incredible Journey* is a virtual tour into the soil that displays and explains the roles of soil organisms and the soil food web and how they interact to provide food for plants and each other
- *Amazing Facts* provides interesting facts about soils in a context younger children can understand

- *Fun Activities* supplies students with hands-on experiences with soils, such as coloring, making insect collection traps, texturing and color identification of soil, and constructing an earthworm farm
- *Explore Your Mind* allows students to test their knowledge about what they have learned from the Just for Kids Web site
- *Adopt a Soil Critter* provides an opportunity for students to adopt a soil organism and learn more about it
- *Want To Know More?* provides links to other soil Web sites, with levels of information for all ages of viewers
- *Kids' Gallery* allows young Web site users to interact with Bureau staff and provide feedback about what they learned from the site

Client and office: Steve Borchard, Washington Office
NSTC project participants: Bill Ypsilantis (lead), Randy Hayes, Janine Koselak, Kathy Rohling
Collaborator: Natural Resources Conservation Service

Anvik Riparian Assessment (Alaska)

In the early 1990s, the Bureau provided a blueprint of management and restoration of riparian–wetland areas. The initiative recognized Alaska as unique in that only a small proportion of the riparian zone had been disturbed. Bureau managers in Alaska needed a cost-efficient means for assessing a large number of remote areas. The Center assisted with testing techniques for employing small-scale aerial photography to assess and document riparian proper functioning condition (PFC). In FY 2002, Center staff worked with Bureau managers in Alaska to assess the Anvik River drainage. The study included a design for statistical sampling, premapping the drainage, and conducting the PFC assessment.

A statistical simulation was used to determine the number of photos required to assess PFC. More than 200 stream reaches were delineated for sampling validation and a report was created on riparian

conditions. Researchers involved determined that the approach developed by the Center was a beneficial tool for documenting PFC in remote areas where most streams are expected to be properly functioning.

Client and office: Michael Scott, Alaska State Office
NSTC project participants: Pam Clemmer, Don Prichard

Fish Slough Groundwater Investigation (California)

A wetland of unique biological diversity, Fish Slough in Owens Valley, California, retains most of its unimpaired characteristics, including critical habitat for endemic fish and plants. Springs, streams, and ponds support thriving aquatic life, including the Owens pupfish (*Cyprinodon radiosus*), Owens tui chub (*Gila bicolor snyderi*), and the Fish Slough springsnail (*Pyrgulopsis pertubata*). The Owens pupfish was believed to have been extinct by 1948, but a few fish were found surviving at Fish Slough. Two of Fish Slough's fish species, the Owens pupfish and the Owens tui chub, are listed as endangered. In 1982, the Bureau designated Fish Slough as an Area of Critical Environmental Concern (ACEC) to preserve the unique aquatic ecosystem. Heavy irrigation is commonly practiced and is likely to increase in this region. As a result, the aquatic ecosystem at Fish Slough is being threatened by water use demands in nearby Chalfant Valley, to the east, and in northern Owens Valley.

To make informed management decisions for preserving adequate water for the Fish Slough area, groundwater recharge mechanisms and critical thresholds need to be determined. In FY 2002, a Center groundwater specialist oversaw the establishment of groundwater monitoring wells to collect geologic information, monitor groundwater levels in the vicinity of Fish Slough, and create groundwater quality assessment locations in the aquifers. Infusions of stable isotopes of oxygen and data on standard water quality parameters were used to determine the source of water found in Fish Slough. Water was sampled several times in 2002 at wells in the vicinity of Fish Slough and from springs and ponds within the ACEC to determine its quality.

Client and office: Terry Russi, Bishop (California) Field Office
NSTC project participant: Paul Summers
Collaborators: California Department of Fish and Game, Los Angeles Department of Water and Power, U.S. Fish and Wildlife Service, University of California.

Environmental Compliance: Toward a Better Natural Environment

In FY 2002, Center staff assisted personnel of other Bureau offices with the evaluation, cleanup, and restoration of contaminated sites and with their environmental compliance responsibilities. Center staff provided evaluation and cleanup design of contaminated sites; cost recovery and cost avoidance associated with the cleanup, restoration, and resource injury resulting from releases of hazardous substances; natural resource damage assessments and restoration; environmental science and technical support; interpretation and compliance support for environmental laws and regulations; and procurement of environmental services. Highlights of work accomplished in FY 2002 follow:

Almeda Mine Site Characterization (Oregon)

The threefold purpose of this project was to: 1) characterize the contamination associated with the Almeda Mine site and assess threats to human health and the environment posed by the contamination; 2) design and implement cleanup actions to reduce identified threats to acceptable levels; and 3) evaluate the performance of the selected remedy. The site, an abandoned mine located on the Rogue River in Oregon, is under the jurisdiction of the Medford (Oregon) District Office. The Rogue River is famous for its rafting and fisheries industries; it is also designated as Wild and Scenic under the Wild and Scenic Rivers Act of 1968.

Center staff assisted the Medford District Office with the characterization of the site, design of

cleanup actions, and evaluation of the selected remedy. Site characterization included water quality sampling from the adit, seeps, and the Rogue River, and solids sampling from mining waste. Further characterization included an assessment of underground features to evaluate options for controlling the source of the acidic drainage and delineation of the 100-year floodplain to ensure that any remedies are not in the floodplain. The characterization determined that, as a result of the acidic discharge from the mine, the site was releasing high concentrations of iron, manganese, and zinc, which are toxic to aquatic life and also a threat to human visitors. The selected remedy for the site was the installation of an Aqua-Fix unit, which passively neutralizes the acidic discharge from the mine adit, thus reducing the release of heavy metals from the site. The performance of the Aqua-Fix treatment system is being monitored and will be evaluated for potential use at other Abandoned Mine Land (AML) sites.

Client and office: Ron Laber, Medford (Oregon) District Office
NSTC project lead: Karl Ford

Caselton Tailings Removal Action (Nevada)

The objective of this project was to complete an analysis of alternatives for cleaning up Caselton Tailings. The site is a large abandoned mine site located near Pioche, Nevada, under the jurisdiction of the Ely Field Office. The site has ten large tailings ponds covering more than 100 acres. Tailings have migrated from some of the ponds into Caselton Wash and more than 10 miles downstream into the Meadow Valley Wash. The dry tailings are a potential health threat as they may migrate to nearby communities through wind erosion.

Working closely with the Ely Field Office, Center staff characterized the site and completed an Engineering Evaluation/Cost Analysis (EE/CA). A Center toxicologist is working with the Bureau of Reclamation to design time-critical remedies. Long-term response action decisions are pending, subject to a reprocessing proposal from a mining company and evaluation of potentially responsible parties. The time-critical actions include fencing, dust suppression, and run-on controls that should reduce migration and human exposure to tailings.

A soil stabilizing compound was selected as the dust control agent. This stabilizing material forms a durable crust that is purported to minimize dust migration for several years. Funding for the work has been obtained from the Department's Central Hazardous Materials Fund.

Client and office: Dan Netcher, Ely (Nevada) Field Office
NSTC project lead: Karl Ford

Geophysical Imaging of Hydrocarbon Releases (Wyoming)

Two sites located near Casper, Wyoming (Poison Spider) and Cody, Wyoming (Ralston Gas Plant), with known releases of hydrocarbons, were imaged by Center staff specialists, who employed two-dimensional electrical resistivity to determine the lateral and vertical extent of the release to the subsurface.

The Poison Spider site consisted of old crude oil with the consistency of tar that migrated to the

ground surface. Several previous attempts to remediate this site had failed, and new volume estimates of the remaining oil–tar were necessary before future attempts could be evaluated. Because natural oil seeps occur in the region, a geophysical survey was also used to determine if a natural seep contributes oil at this site. Overall, this survey was successful in detecting the location of the oil–tar. Difficulties were encountered, however, in estimating the vertical extent of the oil–tar where the survey electrodes were located in tar at or near the ground's surface. The tar inhibited sufficient electrical current from penetrating greater depths, which would have provided information of its vertical extent.

Ralston Gas Plant is a compressor station with many underground and overhead utilities. Waste oil was imaged in several locations and found to be either isolated or migrating along the bedding of several underground pipes. Survey equipment could be placed surprisingly close to the utilities and still produce quality results.

The advantages of geophysical imaging are many. Although its most beneficial aspects are its speed and nonintrusive nature, the technique is relatively inexpensive because Center specialists conduct the geophysical surveys. In FY 2002, staff assisted with and performed numerous geophysical surveys, with objectives ranging from assessing groundwater, determining geologic stratigraphy and structure, and locating buried metal objects and trenches; staff also calculated the volume of landfills and tailings at AML sites.

Client and office: Ken Henke, Wyoming State Office (Poison Spider site near Casper) and Steve Kiracofe, Worland (Wyoming) Field Office (Ralston Gas Plant site near Cody)
NSTC project lead: Brent Lewis

I&W Hot Oil Service Site Engineering Evaluation and Cost Analysis (New Mexico)

The purpose of this project was to develop recommendations for cost-effective solutions for cleaning up contaminants and protecting the environment at the I&W Hot Oil Service site in Eddy County, New Mexico. In FY 2002, Center staff completed an analysis of alternatives for cleaning up the site.

The I&W Hot Oil Service site was discovered in 1986. The site is the result of trespassing and illegal dumping on Bureau-administered land under the jurisdiction of the Carlsbad (New Mexico) Field Office. As determined by the number of oil fields and oil field support companies in the area and the physical and chemical nature of the waste, there is relative certainty that the illegal dump contains oil sludge derived from hot oil treatment of wells and pipelines and from tank batteries in the area. Total petroleum hydrocarbon concentrations at the site range from 2,300 to 460,000 parts per million.

Center staff provided technical oversight on the collection of site characterization information required for the EE/CA. Center staff also developed a Community Relations Plan for the site and assisted in the drafting of the EE/CA. On-site or off-site land farming was the preferred treatment alternative in the initial stage of the evaluation. The discovery of toxicity-characteristic waste (benzene) in the sludge is cause for a reexamination of treatment options. When a new, preferred alternative is selected by the Field Manager, Center staff will complete the Action Memorandum documenting the selected remedy.

Client and office: Link Lacewell, Carlsbad (New Mexico) Field Office
NSTC project lead: Pamela Innis

Enforcement Actions (Arizona, California, Utah, Washington Office)

The Bureau of Land Management is the lead agency on Bureau-managed lands to implement the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorities under Executive Orders 12580 and 13016. The National Contingency Plan and CERCLA authorize the lead agency to pursue recovery of funds spent for the study or cleanup of a site involving the release of—or the threat of a release of—a hazardous substance. It is the Bureau's policy that, where the Bureau has expended such costs and where a viable

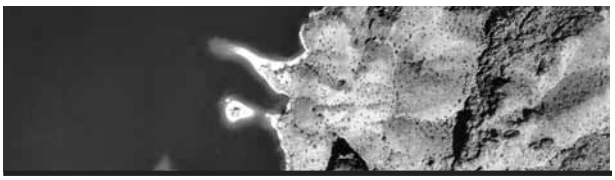
Potentially Responsible Party (PRP) exists, the Bureau shall pursue recovery of the costs spent by the Bureau from the viable PRP.

Any qualified PRP may be held liable for the government's costs for response actions, including costs incurred for investigations, site monitoring, sampling, alternatives evaluation, legal work, contractors, staff specialist work, and equipment. A PRP can be the past or present owner or operator at a site, the arranger for the treatment or storage and disposal of hazardous substances at the site, or a person who transported hazardous substances from the site. PRPs are identified through a standardized PRP search process that determines the chain of title at a site, what activities took place, and when and who was responsible. This information is used to determine legal liability pursuant to CERCLA.

In FY 2002, the Center provided PRP search assistance to several field offices. In FY 2002, Center staff conducted PRP searches for the following sites: the Black Rock Mine site in Bishop, California; the Silver Maple Claims site in Park City, Utah; and the Big Bend, Tyro Mill, Hillside Mine, and Emerald Isle sites—all located in Arizona. Three of these sites are Central Hazmat Fund project sites.

After the PRP search is completed, a Cost Recovery Plan will be prepared to identify what steps will be taken, how, and by whom for the purposes of developing and proving the case against each PRP. The Cost Recovery Plan sets forth assignments and the process necessary to develop the evidence. It enables the Bureau to develop an enforcement strategy and helps to prepare for successful negotiations between the Bureau, the Solicitor's Office, and the PRP. The Center is presently assisting field offices with the development of Cost Recovery Plans on several sites located on Bureau-administered lands.

Client and office: Nancy Dean, George Stone, Washington Office; Tim Ingwell, Salt Lake (Utah) Field Office; Lowell Jeffcoat, Yuma (Arizona) Field Office; Cheryl Seath, Bishop (California) Field Office; Art Smith, Kingman (Arizona) Field Office
NSTC project lead: Janet Youngdahl
Collaborator: U.S. Department of the Interior Solicitor



Resource Systems and Remote Sensing/GIS Applications: Getting the Big Picture

The Center provides national leadership and assistance in the development and use of advanced technological applications for resource management in the Bureau. The staff is responsible for maintaining critical natural resource databases and testing and prototyping technological tools for management use. Recent advances in spatial technology now make it possible to create interactive maps on the Internet within a Web browser. Since most of the Bureau's business (an estimated 70% reported in the 2001 Bureau Enterprise Architecture study) can be tied to locations on the ground, using maps to display the results of studies is very useful. In FY 2002, Center staff explored the capabilities of Environmental Systems Research Institute's (ESRI) Arc Internet Map Server (ArcIMS), generating several prototype spatial Web sites for a variety of customers to demonstrate the technology. The purpose of this work is to create user-friendly interfaces that facilitate presentation and use of existing tabular program data in a spatial context. Until recently, only static map images could be placed on a Web page. New technology allows the user to browse, query, and—to some extent—perform spatial analyses as an ArcIMS environment is set up. Highlights of work accomplished in FY 2002 follow:

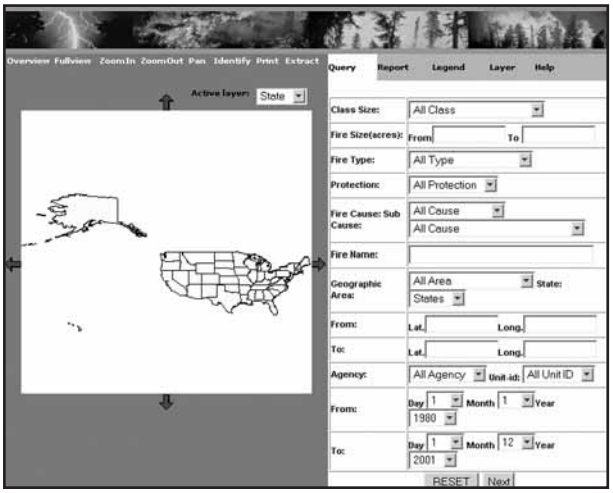
Prototype Web Sites (Bureauwide)

The following prototype spatial Web sites created in FY 2002 by Center staff have been popular in the Bureau at all levels of the organization. These sites can be accessed at ***http://ncsarc.blm.gov/website***. These sites are presently available only to Bureau employees, although some sites should be available to the public by late FY 2003. Several of the vegetation and wildland fire management Web sites are described in more detail following this complete list of ArcIMS Web sites:

Conservation and Restoration Vegetation and Habitat Treatments Environmental Impact Statement Web Site
Land Use Planning Demonstration Web Site
Fire Restrictions Web Site
Federal Energy Regulatory Commission Re-License Project Web Site
FY 2003 Budget Focus Areas Web Site
National Assessment Prototype Project Web Site
New Mexico Demonstration Web Site
Priority Subbasins Identification Project Web Site
Wildland Fire Occurrence Web Site
Western Regional Corridor Study Web Site

Wildland Fire Occurrence Web Site. The Center routinely receives many requests for spatial displays of historical fire occurrence data on public lands. In FY 2002, a prototype fire occurrence interactive Web site was developed that contains historical fire occurrence data from the U.S. Forest Service, U.S. Department of the Interior, Bureau of Land Management, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, and National Park Service. Users can query fire occurrence data, produce standard reports, print, view, and extract the data spatially through the following Web site: ***http://ncarc.blm.gov/website/fire/index.asp***.

Fire Restrictions Web Site. At the height of the 2000 fire season, several coordination centers throughout the country needed current information on area fire restrictions. In FY 2002, Center staff facilitated the development of a prototype Web site (***http://ncarc.blm.gov/website/res/index.asp***) to display current fire restriction information. Users can view fire restrictions by Federal, State, and County jurisdiction.



Conservation and Restoration Vegetation and Habitat Treatments Environmental Impact Statement Web Site. In response to a FY 2002 Bureau special initiative to programmatically address hazardous fuel treatment needs, Center staff created the Bureau's "Conservation and Restoration Vegetation and Habitat Treatments" Environmental Impact Statement (EIS) Web site to display the documents and data associated with the draft EIS. The technical objective of this prototype Web site (***http://ncsarc.blm.gov/website/vegeis***) was to provide an interactive and widely accessible forum for public comment on the contents of this draft EIS.

Clients and offices: Washington Office and State Offices
NSTC project participants: Wendy Bullock, Susan Goodman, Mary Beth Stulz
Collaborators: Pat Green, Eric Janes, Joe Kuka, Mike Mottice, Washington Office; Greg Jensen, National Interagency Fire Center; Bill Weigard, Idaho State Office

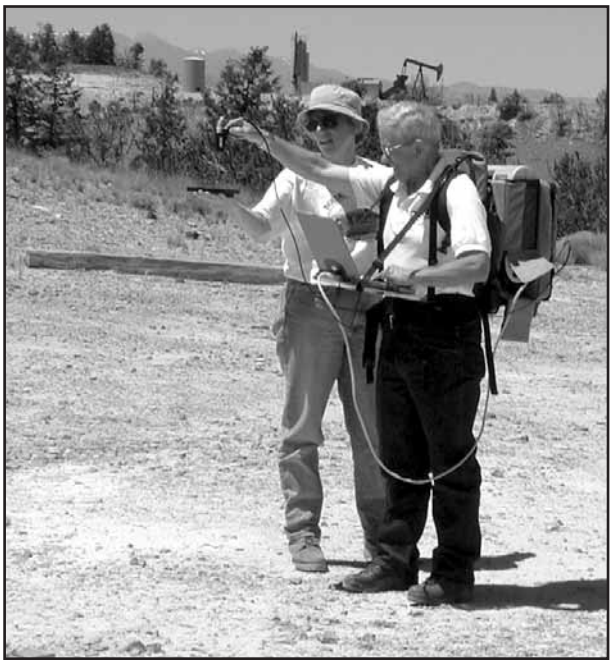
Advanced Remote Sensing Technologies for Monitoring Postburn Vegetation Trends and Conditions (Wyoming, Joint Fire Science Program)

For the past several decades, prescribed fire has proven to be a valuable tool for managing Federal lands. It is an economical and efficient way to reduce accumulated fuel loads resulting from prolonged policies of suppressing wildfires. Prescribed fire helps to control the spread of some exotic species, increase vegetative diversity, and facilitate the regeneration of native grasses and forage for livestock and wildlife. For at least 45 years, natural resource managers have been employing prescribed fire as a range management tool in grassland–shrub ecosystems. Although generally effective for this application, more precise information is needed for comparing the actual response of the ecological landscape to the initial objectives set out in prescribed fire plans. Several newly developed remote sensing techniques were used in the first year to accurately describe the temporal dynamics of vegetation community

composition in grassland–shrub ecosystems after prescribed fire treatments. Although this work is new and innovative, it is based on a strong fundamental framework. To characterize the outcome of prescribed fires in more detail beyond vegetation classification, there is a need for more accurate geospatial information on vegetation. The project relies on recent advances in remote sensing technology and imaging spectroscopy to estimate both the biomass and moisture content of vegetation canopies—specifically, grassland and shrub fuel types.

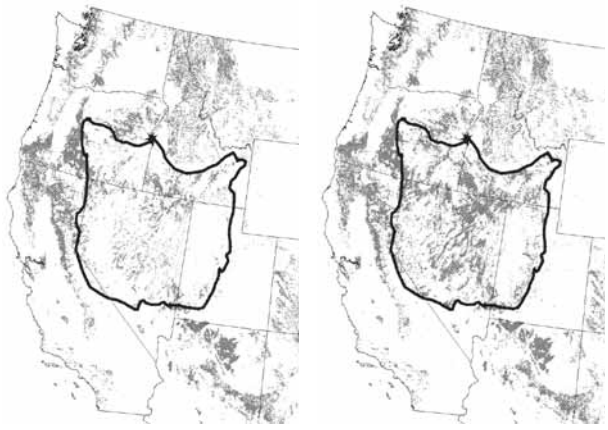
In July 2002, hyperspectral data were generated by flights over the Lefthand Creek Study area (30 miles northwest of Thermopolis, Wyoming). For 2 weeks afterwards, the field crew collected detailed field measurements of shrub, grasses, and forbs. In addition, image spectroscopy measurements were taken over each plot to calibrate the airborne hyperspectral data. In FY 2003, the first-year results will be analyzed and presented at the Joint Fire Science Program principal investigators meeting.

Clients and offices: Joint Fire Science Program; Bruce Keating, Wyoming State Office
NSTC project participant: Susan Goodman
Collaborators: Dave Hammon, National Park Service; Ray Kokaly, Ralph Root, U.S. Geological Survey; Amanda McAdams, U.S. Fish and Wildlife Service; Melinda McGann, U.S. Forest Service



Mapping Departure from Historical Natural Fire Regimes Caused by Cheatgrass in the Great Basin (Montana, Washington Office)

Cheatgrass (*Bromus tectorum*) dominates large areas in the Great Basin region of the United States. Cheatgrass is an invasive, exotic annual grass that has replaced native vegetation and exacerbated fire hazards on millions of square kilometers in the western United States. Cheatgrass is a very effective competitor in disturbed environments (such as those created by fire) and can be highly flammable at certain times of the year. Cheatgrass has significantly altered the timing of wildland fires and increased wildland fire size and frequency in some areas. The full extent of the cheatgrass problem and its effect on natural fire regimes is not well understood. A reliable estimate of the extent and distribution of cheatgrass and its rate of expansion in relation to fire occurrence is needed to address the cheatgrass management challenge.



In FY 2002, Center staff and members of the U.S. Forest Service Rocky Mountain Research Station in Missoula, Montana, worked together to map departures from natural fire regimes caused by cheatgrass occurrence. To evaluate the effect of cheatgrass on historical natural fire regimes, cheatgrass occurrence data mapped from Advanced Very High Resolution Radiometer for the Great Basin were combined with Fire Regime Condition Class (FRCC) data mapped from plant succession data. The FRCC data depict the degree of departure from historical fire regimes in relation to species composition, structural stage, stand age, and canopy closure. Although the FRCC data layer adequately depicted forest communities, it insufficiently depicted grassland and shrubland communities.

A comparison of Fire Regime Condition Class 3, without cheatgrass added, to Fire Regime Condition Class 3, with cheatgrass added, clearly depicts an 11% increase (see maps, page 22). The boundary for the Great Basin is represented by the bold line. This product brings perspective to the Great Basin Region cheatgrass situation. It will be useful for estimating the restoration effort required to restore healthy, productive rangelands in this region.

Client and office: Sherm Karl, Washington Office
NSTC project participant: Dianne Osborne
Collaborators: James P. Menakis, U.S. Forest Service; Melanie Miller, Bureau of Land Management

Wetlands Delineation for the North Platte Headwaters in Colorado (Colorado)

The Colorado State Office asked for assistance in identifying critical wetland and fen areas in the North Park area of Colorado. The same remote sensing techniques used in identifying wetland and fen areas in South Park in FY 2001 were employed.

Landsat imagery acquired late in August and image processing techniques were used to assist in identifying probable wetlands and fens. Later date imagery ensures that higher vegetative spectral responses are more indicative of riparian areas than spring or early summer images. Image processing consisted of the following: 1) Tasseled Cap Transformation (a linear transformation that rotates data onto new axes directly correlating to the vegetation's physical characteristics), 2) criteria analysis performed on band three of the Tasseled Cap Transformation, 3) elevation masking (where only elevations less than 2,800 meters were analyzed), and 4) slope masking (where slopes >4% and slopes <4% were identified against the criteria model).

The final hardcopy and softcopy products were delivered to a government-contracted environmental consultant. The consultant used the information to optimize time in a large area with a short field season to identify areas in need of field verification.

Client and Office: Roy Smith, Colorado State Office
NSTC project participant: Pam Clemmer
Collaborators: Brad Johnson, Johnson Environmental Consultants, Fort Collins, Colorado

Cooperative DOQ Production (Washington Office)

Digital Orthophotoquads (DOQs) have been found to be of great utility to those who manage the land. In FY 2002, through an Intra-agency Agreement with the USGS, the Center was able to complement the Department of the Interior's High Priority Program and complete DOQ spatial data coverage over Bureau lands. Two thousand two hundred DOQs have been produced or are in production through this agreement. The production cycle takes from 12 to 18 months because of the use of aerial photography. Final delivery to the State Offices will by completed in FY 2003. Through the use of these complementary programs, the Center has completed development of the DOQ dataset for Bureau-managed lands.

Client and Office: Ed Harne, Washington Office
NSTC Project Participant: Debra Dinville
Partner: Carol Giffin, U.S. Geological Survey

ePlanning (Washington Office)

In FY 2000, the Bureau began a 10-year initiative to address the adequacy of its land use plans. As part of this initiative, the Bureau recognized that information technology could provide assistance with these plans. The Bureau launched a national project called E-Gov ("electronic government") for Planning and National Environmental Policy Act (NEPA), known as ePlanning, to address information technology planning requirements. The ePlanning project is geared toward the development and implementation of tools, software, and processes that meet the Bureau's land use planning needs in an information technology environment. The project focuses on the full life cycle of land use plans. In FY 2002, user requirements for the overall project, the comment–content tracking–analysis system, and an internal Web communications site were completed (***http://web.blm.gov/eplanning***). The pilot for the project, Integrated Activity Plan (IAP) for the Northwest National Petroleum Reserve–Alaska, was selected. Version 1 of the draft IAP in the ePlanning format, known as the interactive document, is almost complete.

Client and office: Pat Green, Washington Office
NSTC project participant: Mary Beth Stulz

Resource Systems Support (Bureauwide)

The Center supports user representatives of several major natural resource database systems. They serve as liaisons between the field user and database development and management personnel in the Bureau. Two of these database systems underwent significant programmatic and technical developmental modifications in FY 2002.

Wild Horse and Burro System. Center staff continued to support the Bureau's Wild Horse and Burro Information System in FY 2002. Two major efforts were started and completed in FY 2002:

1) A software module that automates the designation of adopted and untitled wild horses and burros for inspection by field offices was developed and placed in production. This module ensures adopters' compliance with the terms of the private maintenance and care agreement. The rates of the previous year's compliance, by State, are calculated and used to determine the size of the next year's sample. The sample is then randomly drawn from the pool of eligible (adopted, live, untitled, not previously inspected) animals in each State. Files are sent to each State Office, identifying the animals to be inspected and the adopter responsible for the animal's welfare.

2) The second major accomplishment was the preparation of a business case outlining criteria for designing, developing, and implementing an integrated Wild Horse and Burro Program System for the Bureau. The existing disposal system, which tracks the removal of excess animals and their disposition through preparation, shipment, adoption, compliance inspection, and titling or death will be incorporated with new software and made available on a Web site. Center staff worked with an acting project manager and others in the program to complete the required business case for the comprehensive Wild Horse and Burro Program System. On June 11, 2002, the business case presented to the Bureau's Information Technology Investment Board was approved. A project manager was hired to begin the development of the program re-engineering process, development of user requirements, and analysis.

Client and office: John Fend, Washington Office; Bureau field offices
NSTC project participant: Dick Stark
Collaborators: Greg Miller, Baker City (Oregon) Field Office; Cathy Cooney, System Coordination Office, Denver

Rangeland Administration System. The Rangeland Administration System (RAS) was deployed on October 12, 2001. This system replaced the Grazing Authorization and Billing System (GABS) that had been in use since 1987. All GABS data were converted and are available in RAS. RAS is used to produce near real-time rangeland administration and authorization documents (grazing permits and leases, grazing applications, grazing bills, exchange-of-use agreements) and standard reports that facilitate administration of the Bureau's grazing program. RAS data are also available for ad hoc query. RAS produces about 18,000 grazing applications, 2,400 grazing authorizations, and 30,000 grazing bills annually. Center staff facilitated the transitional work on the system completed by the Land and Resource Project Office. The system can be accessed at ***http://web.ras.blm.gov/ras/ras.html***.

Client and office: Tim Reuwsaat, Washington Office
NSTC project participant: Leon Pack
Collaborator: Leslie Cone, Land and Resource Project Office

The BLM Library: Sharing Knowledge

The Bureau is charged with effectively managing the Nation's public lands on the basis of accurate scientific information (BLM Science Strategy 2000). Located at the Center, the BLM Library provides access to current information on technologies, procedures, and studies of importance to Bureau scientists and managers. The BLM Library supports the Bureau, free of charge, with a full range of services including reference, interlibrary loan, cadastral survey information sets, and listings of

recent publications. With more than 50,000 volumes and 250 periodical subscriptions available for its use, the library staff is able to keep Bureau staff apprised of current research and development, applied technology, legislation, and administration. Highlights of work accomplished in FY 2002 follow:

Literature Searches (Bureauwide)

The BLM Library staff has access to nearly 1,000 databases containing citations and abstracts to periodicals, books, reports, conference proceedings, and dissertations. In FY 2002, the Library performed literature searches resulting in bibliographies used in many Bureau initiatives, including the following: 1) effects of grazing and drought on grass, 2) designation and methods of establishing seed zones and maintaining genetic integrity, 3) effects of windfarms on bats, 4) Regional Resource Information Synthesis: Landscape Fragmentation on the Colorado Plateau, and 5) sagebrush restoration.

Client and office: Bureauwide
NSTC project participants: Elizabeth Araki, Joan Penzien

Electronic Resources (Bureauwide)

The BLM Library updated its library systems software to Electronic Online Systems (EOS) International's Q Series, a sophisticated, next-generation library information management and access software. The Q Series provides a single point of access to the Bureau's Library collection, multimedia files, CD-ROMs, Universal Resource Identifier (URI) Universal Resource Locator/ Universal Resource Name (URL/URN) links, and commercially or internally published documents and journals found on the Internet, Intranets, and Extranets. The special collections held at Bureau field offices will be added in the future. Access to the new system, through the EOS eLibrary Service, an Application Service Provider, can be reached from any internet-connected computer at ***http://207.67.203.45/B10109/***.

Searchable databases and access to full-text journals are available to Bureau staff through the Library's internal Web site. The Library bolstered its internal Web site offerings with BIOone, a unique aggregation of prominent bioscience research journals, including journals from Auk to Wilson Bulletin and Wildlife Worldwide, the world's largest index to literature on wild mammals, birds, reptiles, and amphibians.

Client and office: Bureauwide
NSTC project participants: Barbara Klassen, Joan Penzien

Providing Supporting Documentation (Bureauwide)

Interlibrary loan and document delivery services provided information support for Bureau land management decisions. In FY 2002, the Library filled more than 4,200 requests for books and reports, as well as 2,100 requests for journal articles. Documents provided by the Library were used to validate a Prineville, Oregon, environment assessment; aid in the identification of prehistoric remains in Nevada; write a report on the ten standard fire orders for wildland fire; help write a cultural resource report for a fire rehabilitation project; provide information for ecosystem and mining management for soils; and prepare various environmental assessments. Also provided to Bureau staff were copies of legal and administrative documents such as Interior Board of Land Appeals, Federal Register notices, Bureau manual sections and directives, and court cases.

Client and office: Bureauwide
NSTC project participants: Joan Penzien, David Woodworth

Cadastral Survey Information (Bureauwide)

More than 72 requests for historical cadastral survey information were addressed during FY 2002: 1) In addition to serving Bureau offices, the Center assisted the Bureau of Indian Affairs; the City of Aurora, Colorado; Park County, Colorado, archives; the Nevada Power Company; and the Colorado Division of Water Resources. 2) Private corporation requests came in from Title Company of Colorado, Davis Engineering Service, the law offices of Luxan and Murfitt, Northern Colorado Title Company, and Milestone Surveying of Montana.

Client and office: Bureauwide
NSTC project participants: Kenneth Grace, Nathan Matthews

BLM Library Update (Bureauwide)

The Library produces—in print and on the Bureau's Web site—a monthly publication, BLM Library Update (BLU), that contains a listing of citations from current publications pertaining to natural resources and management. In FY 2002, Bureau staff made 330 requests for a total of 3,600 articles and books listed in the BLU. This invaluable current-awareness service brings the latest information to remote field offices free of charge.

Client and office: Bureauwide
NSTC project participants: Elizabeth Araki, Crystal Talavera

Reference Services (Bureauwide)

More than 725 reference questions were responded to, providing program support and information to both the public and Bureau staff. Such topics included a list of all presently active mines and lumber mills in the United States, the definition of the term bioblitz, a copy of a Public Land Order from the Federal Register, information on the longest dirt road in the conterminous United States, and the origins of the place name Wounded Knee. The Library also responded to several international requests.

Client and office: Bureauwide
NSTC project participants: Elizabeth Araki, Joan Penzien

Table of Contents Service (Bureauwide)

The Library's Table of Contents Service, provided through a private vendor, keeps Bureau personnel informed of current research in their areas of interest. Bureau employees can select as many as 50 journal titles from which the tables of contents are sent electronically each month by email. The employee can then request from the Library any of the articles listed, free of charge.

Client and office: Bureauwide
NSTC project participants: Joan Penzien, David Woodworth

Publications Support: Delivering the Message

The staff of the Center provides a full range of publication services, from consultation and planning to coordination of printing and distribution. Working in concert, Center editors and visual information specialists support the production of Bureau technical manuscripts and articles, planning and environmental documents, general interest brochures and pamphlets, newsletters, training materials, exhibits, posters, and other publications. Highlights of work accomplished in FY 2002 follow:

The BLM in Pictures: Images from the Public Lands (Washington Office)

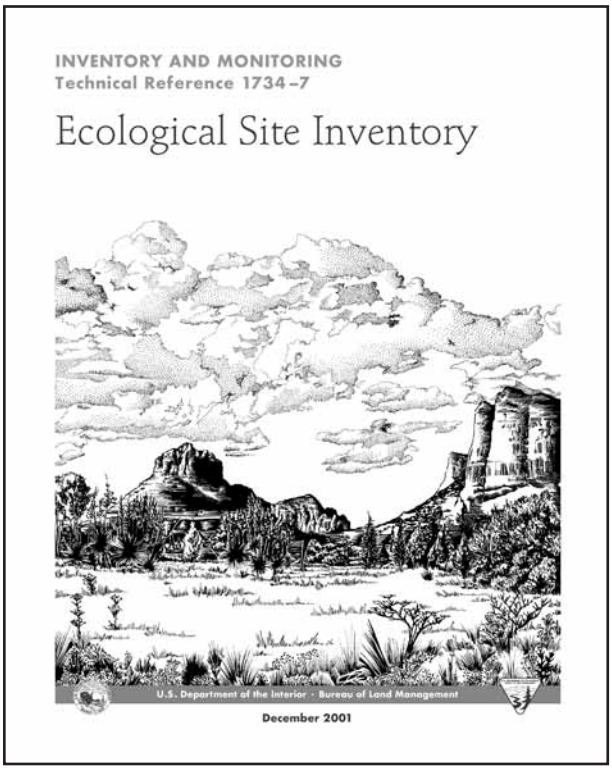
A set of 24 photo postcards, *The BLM in Pictures: Images from the Public Lands* shows the beauty and diversity of the public lands and natural resources under the stewardship of each of the Bureau's 12 State Offices. The postcards were distributed to the public by the State External Affairs Offices and were also given to attendees at the 2002 Winter Olympics in Salt Lake City, Utah. The publications staff from the Center provided guidance in selecting the best-quality photos, designing and producing the postcards, and writing and editing postcard captions.

Client and office: Jeff Krauss, Washington Office
NSTC project participants: Peter Doran, Kathy Rohling

Can I Get Free Land from the BLM? (Bureauwide)

Publications staff helped convert a Web document to a trifold brochure, *Can I Get Free Land from the BLM*, as a timely way to respond to questions from the public concerning the availability of Bureau lands. It contains the most commonly asked questions and answers about acquiring Bureau land and whom to contact for additional information.

Client and office: Jeff Krauss, Washington Office
NSTC project participants: Ethel Coontz, Kathy Rohling



Ecological Site Inventory (Bureauwide)

Technical Reference 1734-7, *Ecological Site Inventory*, identifies the procedures for completing an ecological site inventory and describes the technique used by the Natural Resource Conservation Service to document and describe ecological sites. The ecological site inventory has been the Bureau's standard vegetation inventory technique since 1982. This publication makes available to Bureau resource specialists information that provides a basis for consistent, uniform, and standardized resource inventory data collection.

Client and office: Dick Mayberry, Washington Office
NSTC project participants: Ned Habich (lead), Janine Koselak, Kathy Rohling

Helium Resources of the United States—2001 (Texas)

Technical Note 408, *Helium Resources of the United States—2001,* provides information on the status of the Nation's identified helium resources through December 31, 2000. It relates some of the history and background of the government's Helium Operations Office and of the acts passed by Congress pertaining to management and conservation of the country's helium resources, such as the Helium Privatization Act of 1996. The Helium Operations Office has been estimating the Nation's helium resources for about 55 years in connection with a search for helium occurrences that has been conducted for more than 80 years. The report categorizes the resources on an economic basis and includes measurements, locations, uses, production, extraction, and supply and demand forecasts. Center staff provided writing, editing, design, and layout assistance for this publication.

Client and office: Brent Gage, Amarillo (Texas) Field Office
NSTC project participants: Ethel Coontz, Kathy Rohling

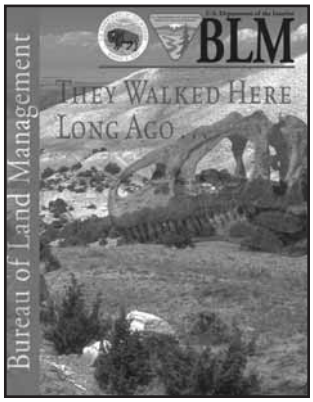
BLM: The Open Space Agency (Bureauwide)

The first in an ongoing series of brochures produced by the Bureau, *BLM: The Open Space Agency* describes the Bureau's role in managing our Nation's public lands. Commercial activities, recreational opportunities, and conservation programs are the three broad categories into which the Bureau's activities fall. Among its responsibilities, the Bureau is involved in wildland fire management, wild horse and burro adoptions, the National Landscape Conservation System, and public land records and title information. Project assistance included editing, graphics design, and layout.

Client and office: Jeff Krauss, Washington Office
NSTC project participants: Peter Doran, Deborah Harris

They Walked Here Long Ago (Washington Office)

They Walked Here Long Ago is part of a series of brochures developed by the Washington Office, with which the Center is providing assistance. The brochure describes our fossil heritage—specifically fossil tracks—and discusses how vulnerable they are and how important it is to preserve and



protect them for future generations of Americans. Project assistance included editing, graphics design, and layout.

Client and office: Jeff Krauss, Washington Office
NSTC project participants: Janine Koselak, Kathy Rohling

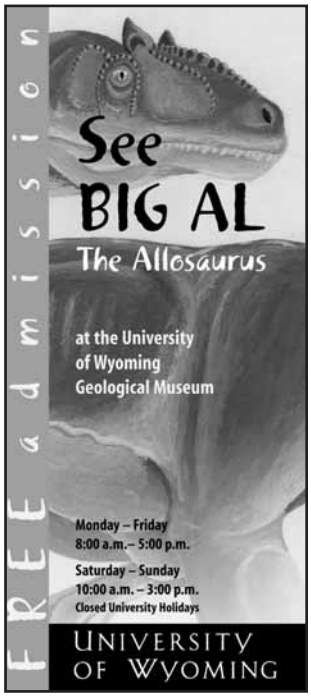
Share the Adventure! Discovering Dinosaurs (Washington Office)

In October 2001, the Bureau hosted a live, interactive satellite broadcast featuring the excavation of rare fossils from the Grand Staircase–Escalante National Monument in south-central Utah. The purpose of the broadcast was to provide an electronic field trip for students in grades five through nine. The broadcast included footage of the actual excavation, as well as discussions with professional paleontologists from the Bureau and the Museum of Northern Arizona. Before the broadcast, Washington Office Environmental Education staff worked with publication specialists at the Center to produce an educator's guide, *Share the Adventure! Discovering Dinosaurs*. The guide contained information about how to participate in the broadcast and also provided background material for students to read and activities for educators to use to enhance the learning experience in the classroom. The guide was sent out to teachers before the broadcast and was also made available on a Web site. The broadcast and educator's guide made it possible for students around the country to visit a unique Bureau site and learn more about its diverse resources.

Client and office: Elizabeth Rieben, Mary Tisdale, Elizabeth Wooster, Washington Office
NSTC project participants: Ethel Coontz (lead), Linda Hill

See Big Al the Allosaurus (Wyoming)

The brochure *See Big Al the Allosaurus* was designed to inform the public about the University of Wyoming's Geological Museum and their Allosaurus display. The brochure contains a map to the museum, a description of what is on display at the museum, a brief history of Big Al, and a sampling of questions that can be answered at the museum. A panel was also formed to discuss the role Bureau lands play in the discovery of fossils, the history of fossils in Wyoming, and what individuals should do if they find fossils on Bureau land. Web site addresses for more information were also provided. More information about this project is available at the following Web site: ***http://www.uwyo.edu/geomuseum/allosaur.htm***.



Client and office: Dale Hanson, Cindy Wertz, Wyoming State Office
NSTC project participants: Jennifer Kapus, Neffra Matthews
Collaborators: Brent Breithaupt, University of Wyoming; Jane and J. David Love, Richard and Elizabeth Southwell, University of Wyoming Geological Museum Friends of the Dinosaurs; University of Wyoming College of Arts and Sciences; and Museum of the Rockies in Montana

BLM's 2001 Annual Report: Multiple Use for a Changing America (Washington Office)

The Bureau's 2001 Annual Report contains its financial statements for FY 2001, highlights various Bureau programs, and provides a report on stewardship assets. Specifically, it contains the Bureau's mission and organizational structure, as well as performance goals and results. The Bureau's systems, controls, and legal compliances are discussed, as are the future effects of presently known demands, risk, uncertainties, events, conditions, and trends on Bureau land. One section is dedicated to stewardship assets, such as stewardship lands (monuments, NCAs), natural heritage assets, museum collections, and paleontological and cultural heritage properties. The 25th anniversary of the Federal Land Policy and Management Act was highlighted at the beginning of the report.

Client and office: Dennis Sykes, National Business Center
NSTC project participant: Jennifer Kapus

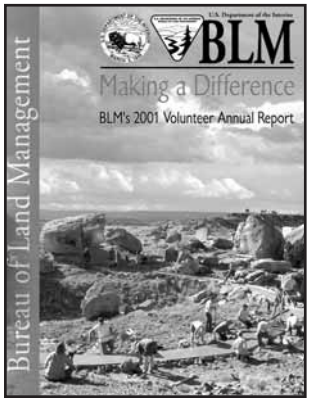
BLM's Annual Performance Plan 2003–Annual Performance Report 2001 (Washington Office)

The 2003 Annual Performance Plan sets forth both long-term goals and annual performance goals, lists performance measures, and summarizes results achieved as required by the Government Performance and Results Act.

The following is an excerpt from the Executive Summary: To ensure that the Bureau of Land Management remains a responsive, dynamic, and relevant government agency that serves its citizens, we are focusing our attention on citizen-centered governance in FY 2003 and beyond. Our Annual Performance Plan for FY 2003 and Annual Performance Report for FY 2001 emphasize this focus by identifying our significant processes and services, by helping us expend our resources in a way that enhances service to the public, by carefully accounting for our costs of activities and outcomes, and by enabling us to monitor and evaluate our effectiveness. We will be communicating, collaborating, and cooperating with key clients, both public and private, to help us achieve the desired outcomes stated in the Plan. We intend to meet our clients' service-oriented goals while maintaining an appropriate balance with protecting and conserving critical resource values.

Client and office: Janine Velasco, Washington Office
NSTC project participant: Jennifer Kapus
Collaborator: Robert Woerner, National Business Center

Making a Difference: The BLM's 2001 Volunteer Annual Report (Washington Office)



The Bureau's 2001 Volunteer Annual Report documents more than 1 million hours of volunteer effort on Bureau lands during FY 2001, an effort valued at more than $18 million. In addition, the report illustrates the specialized skills many volunteers bring to the campgrounds and other recreation sites they work in. The report includes a variety of volunteer success stories, as well as detailed statistics from Bureau State Offices and Centers. This document is available electronically at ***http://www.blm.gov/volunteer/news/annreport/index.html.***

Client and office: Elizabeth Wooster, Washington Office
NSTC project participants: Janine Koselak (lead), Kathy Rohling

Eastern States Annual Report Fiscal Year 2001 (Eastern States Office)

Each year, the Bureau's Eastern States Office puts together a summary of its activities for members of Congress, interest groups, and clients. This year, Eastern States wanted to present this information in a different format. The Eastern States External Affairs Office worked with Center publication specialists to develop a foldout brochure containing bulleted lists of accomplishments in various programs, including energy and minerals, cadastral survey, General Land Office records, lands and realty, environmental education and outreach, and wild horses and burros. The brochure also included information on Eastern States' history and mission, area of jurisdiction, funding levels, and payments to State governments. This compact format was an effective way for Eastern States to disseminate a large amount of information to a diverse audience.

Client and office: Peggy Riek, Eastern States Office
NSTC project participants: Linda Hill (lead), Janine Koselak

Creating Opportunities While Meeting Management Challenges

The Bureau of Land Management shares common goals with many other organizations—the appreciation, conservation, and wise use of the irreplaceable treasures of public lands. Bureau partners have demonstrated their commitment to these objectives through contributions to resource projects, efforts to educate the public about the conservation of public lands, and the donation of materials.

Project Partnerships

California Desert Predictive Soil Modeling Project

The purpose of this project is to develop protocols for the application of remote sensing and GIS to obtain an inventory of soil in the California Desert District. The objectives of this pilot effort are to 1) develop and refine the use of remote sensing data and GIS techniques and spatial statistics analysis to predict the occurrence of soils across a landscape, 2) develop protocols for the use of remote sensing data in progressive soil surveys and soil survey updates, and 3) develop technology transfer tools to ensure expanded use of this technology. To aid in technology development, a Cooperative Ecosystem Studies Unit task was developed to employ an individual at the University of California, Santa Barbara.

The products of this effort will include a significant technology transfer component. Through systems development and training, field office specialists should be able to digitally map areas to aid in presoil surveys or to update older surveys. The Galway Lake Quadrangle was selected for beginning the development of protocols and for demonstrating results.

Client and office: Mark Conley, California State Office
NSTC project participants: Bill Ypsilantis (lead), Al Amen, Jacek Blaszczynski, Pam Clemmer
Collaborator: University of California, Natural Resources Conservation Service

National Fire Plan FY 2001 Year-end Report

In October 2001, the Department of the Interior's Office of Wildland Fire Coordination requested maps for the National Fire Plan year-end report. The maps for each of the 50 States consist of communities at risk and the land management agencies' fuels treatments. Fuels treatments are either associated with wildland hazardous fuels or communities at risk in the wildland–urban interface. A Center staff member built the GIS fuels layers and coordinated the gathering of these data from each of the fire

agencies. The U.S. Geological Survey created the final products and worked with staff to produce an interactive ArcIMS Web site, which may be accessed at ***http://www.fireplan.gov/fire_maps.cfm.***

Client and office: Office of Wildland Fire Coordination, Department of the Interior
NSTC project participant: Susan Goodman
Collaborators: Mike Hutt and Liz Lile, U.S. Geological Survey, Rocky Mountain Mapping Center

Regional Resource Information Synthesis: Landscape Fragmentation on the Colorado Plateau

Gathering and interpreting scientifically sound information on changing resource conditions are challenging at any scale. A critical agency need is to develop a timely, cost-effective means of assessing a spectrum of conditions, trends, and cumulative effects of current and potential management activities on a regional scale. The Center is developing a prototype strategy for quickly synthesizing, analyzing, and interpreting regional information on critical resource conditions and trends related to high-priority public land management issues. The goal of the first phase of this project is to discover: 1) how much information can be gathered in a relatively short time for an administratively complex biogeographic analysis area, 2) which information is of most value to public land managers, and 3) reasonable and necessary costs associated with regional information analysis activities.

A great deal of science-based information has already been developed for this region and issue-oriented regional information analysis would be of significant value. Additionally, the high level of interagency cooperation on natural resource management issues across the Plateau will be instrumental to the near- and long-term success of this project. The Center has already engaged resource specialists and subject matter experts from a variety of agencies and organizations including the USGS, Colorado State University, and The Nature Conservancy. The Center has held interagency workshops to assist in defining the scope of the work as well as drafting an analytical approach. Further, this project has benefited from a groundbreaking partnership with the Environmental Protection Agency (EPA). Staff members from EPA, Region 8, have provided technical support and products as well as strategic guidance.

In October 2002, Center staff gave land managers an assessment of the condition, trends, and risks associated with landscape habitat fragmentation and conversion on the Colorado Plateau; identified information gaps; and assessed the utility of synthesized information in supporting opportunities to alter trends.

Client and office: Mike Mottice, Washington Office; Mark Stiles, Chair, Colorado Plateau Managers Group B
NSTC project participants: Brian St. George, Charisse Sydoriak
Collaborators: U.S. Geological Survey, Environmental Protection Agency

San Dimas Technology and Development Center

In FY 2002, the Bureau and the U.S. Department of Agriculture (USDA) entered into a partnership to increase collaboration on projects of common interest in the engineering community. As part of this partnership, the Bureau participated on a Steering Committee that evaluates and selects projects for review through the USDA Engineering Technology and Development Program. Because of the similarities in mission with the USDA, much of the information exchanged is directly transferable to the Bureau. As a member of the Steering Committee, the Bureau is able to submit project proposals and evaluate problem statements and issues of a national scope, including construction techniques, watershed restoration, facilities, environmental compliance and protection, water and sanitation, bridges, and roads. Additionally, this partnership provides the Bureau with access to a resource that develops unique technological solutions and tools in recreation, archeology, and other disciplines. Examples of these tools and technologies include the design for disinfection of potable water at remote sites and the development of a lightweight and foldable archeology backpack screen.

Client and office: Linda Force, Washington Office
NSTC project lead: Bob Hart, Victoria Josupait
Collaborator: U.S. Forest Service

USGS–BLM Science Partnership Web Site

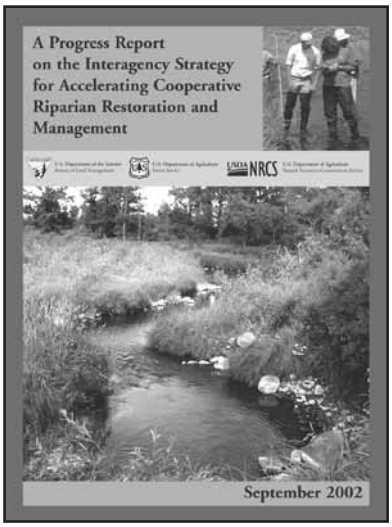
The partnership that led to this Web site was initiated between the U.S. Geological Survey–Central Region, the Center, and the Bureau's Colorado State Office. The intent of this partnership is to focus on the Bureau's National Landscape Conservation System (NLCS) lands in Colorado as a template for a broader national perspective. Newly designated Bureau NLCS lands in Colorado are providing an opportunity for the partners to share their expertise—the skills and knowledge of their scientists and technical specialists—to help land and natural resource managers make well-informed choices when facing future challenging resource decisions and in developing land use and resource management plans. The NLCS areas for this partnership are the Gunnison Gorge National Conservation Area and Wilderness, the Canyons of the Ancients National Monument, and the Colorado Canyons National Conservation Area and Black Ridge Canyons Wilderness. These recently designated Bureau lands will be receiving increased use from visitors desiring to discover and explore these outdoor museums. The Bureau is seeking to balance preservation and protection with promotion and resource utilization. This USGS–BLM Web site is available at ***http://www.blm.gov/nstc/USGS%20BLM/***.

Client and office: Scott Davis, Colorado State Office
NSTC project participants: Randy Hayes, Jennifer Kapus, Kathy Rohling
Collaborator: Frank D'Erchia, U.S. Geological Survey

A Progress Report on the Interagency Strategy for Accelerating Cooperative Riparian Restoration and Management

In 1996, the Bureau and the U.S. Forest Service, in partnership with the Natural Resources Conservation Service, initiated the strategy Accelerating Cooperative Riparian Restoration and Management. The strategy represents an innovative approach for fostering collaboration and public participation in riparian area management, which leads to increased understanding of riparian function, improved relations, and better decisions. Since the strategy was implemented, there have been a number of significant accomplishments. The National Riparian Service Team worked with publications specialists at the Center to produce a report that summarizes the activities of the Riparian Coordination Network and features examples from many of the Western States, Canada, and Mexico. The report is a useful tool for increasing awareness of and support for the strategy.

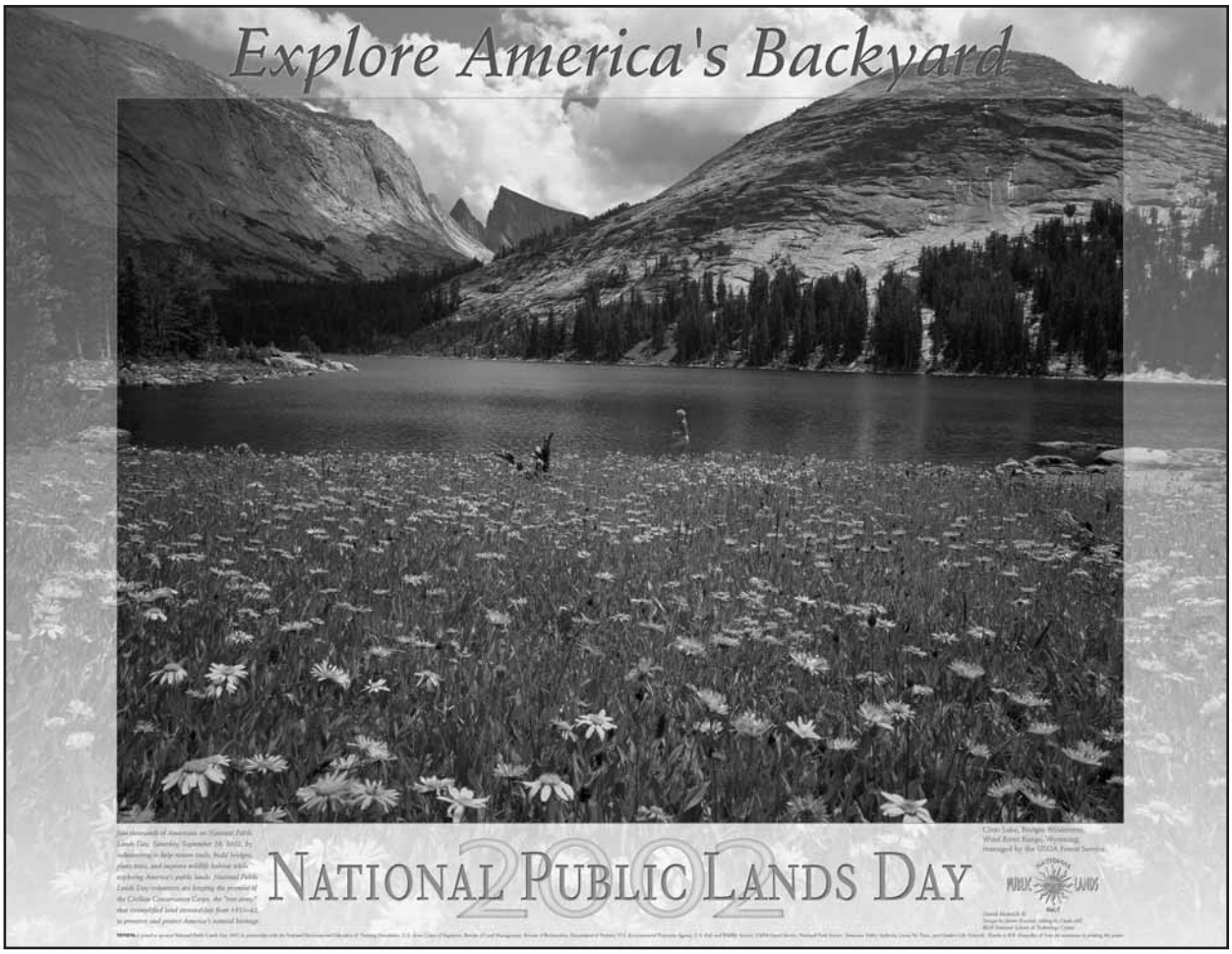
Client and office: Carol Connolly, National Riparian Service Team
NSTC project participants: Linda Hill (lead), Jennifer Kapus
Collaborators: Natural Resources Conservation Service, U.S. Forest Service



National Public Lands Day

National Public Lands Day is an annual event during which volunteers work together to improve and restore our country's public lands. The event is sponsored by several Federal, State, and local public land agencies, corporations, and nonprofit organizations. Several months before the FY 2002 event, the National Environmental Education and Training Foundation worked with the Washington Office Environmental Education staff and publications specialists at the Center to produce promotional materials, including a poster, a flyer, and a brochure. These materials are essential for recruiting volunteers and publicizing the event. They are widely distributed through all of the partner agencies and play a key role in the success of this popular event.

Client and office: Mary Tisdale, Washington Office; Patti Pride, National Environmental Education and Training Foundation
NSTC project participants: Janine Koselak (lead), Linda Hill
Collaborators: Various Federal, State, and local public land agencies, corporations, and nonprofit organizations



National Science and Technology Center Staff Detailed Externally

Dan Muller, Chief, Branch of Science Applications, was selected to work in the Bureau's Washington Office within the Rangelands, Soils, and Water Group to assist with water resource issues. Muller worked on a flexible funding review, a rangeland roundtable, and a riparian area management annual report. He also participated in interagency meetings, reviews for legislative affairs, and budget planning. He interacted with the Bureau Budget Office to better understand emerging approaches to fund allocations. He was also particularly interested in the various interagency efforts to assess conditions of rangeland resources at larger scales. Muller believes it is extremely worthwhile for employees to visit the Bureau's Washington Office and develop an understanding of national issues and priorities.

Bruce Van Haveren, Science and Research Advisor for the Branch of Science Investigations, was detailed to the U.S. Geological Survey headquarters in Reston, Virginia, as Acting Chief Scientist for Biology during September and October 2002. The Office of Chief Scientist (Biology) is responsible for coordinating six science programs: Contaminant Biology; Fisheries and Aquatic Resources; Invasive Species; Status and Trends of Biological Resources; Terrestrial, Freshwater, and Marine Ecosystems; and Wildlife and Terrestrial Resources. The Office consists of about 40 scientists and support personnel.

Other Personnel Working at the National Science and Technology Center

Carol Giffin, Liaison, U.S. Geological Survey

Carol Giffin serves as a U.S. Geological Survey (USGS) representative to the Center, interacting with Washington Office, State Office, and field office representatives to address joint mapping issues, geographic research, the exchange of technical information, and partnership development. The cooperative efforts of the Bureau and the USGS have resulted in new geographic data portraying the land's features, the development of the National Spatial Infrastructure, the building of the National Map, and the synthesis of scientific information for land managers. Richard Dieter served as the USGS representative while Giffin completed an assignment in geographic research. The Center is addressing an extensive range of science issues, and Giffin provides two-way communication between the USGS and the Bureau in many science-related activities.

Sarah Barnett, Intern, Old Dominion University, Virginia

Sarah Barnett is majoring in Interdisciplinary Studies, with concentrations in Advertising Design and Marketing Management, at Old Dominion University in Virginia. Her summer internship with the BLM Library involved a project to develop a Web page with an index list of BLM Circulars. This project provided hard-to-locate information about the Bureau of Land Management to Bureau personnel and the public.

Jennifer Knudson, Intern, University of Colorado, Boulder

Jennifer Knudson, a history major at the University of Colorado, Boulder, is completing her work on the Washington Office project to digitize and create a database of historical photos of Bureau activities. This collection, held by the BLM Library, contains more than 3,400 images dating back to 1893. Knudson's work will make these photo files available on the Web as an addition to the Bureau's Digital Photo Library, at ***http://www.photos.blm.gov***.

Lisa Szabo, Intern, Metropolitan State College, Denver, Colorado

Lisa Szabo is a Technical Communications major, with emphasis in Technical Writing, at Metropolitan State College of Denver. She is employed as an editorial assistant at the Center and divides her time between the Branch of Science Investigations and the Information and Communications Staff. Her projects include creating an annotated bibliography for the Colorado Plateau Project, editing the Center's FY 2002 Annual Report, and editing Resource Notes.

Crystal Tucker, Intern, Arizona State University, Tempe

Crystal Tucker is a student at Arizona State University, Tempe, where she is majoring in life sciences with a focus on ecology. She worked with the Environmental Compliance staff, assisting with abandoned mine site evaluation and cleanup. Tucker assisted with collecting soil and water samples, analyzing data, and writing reports. First aid, CPR, and other training were also completed during her term. She plans to continue to work within the Bureau on land use planning or remediation using the knowledge she has gained while working for the Center.

Volunteers

Deziray Simmons, a freshman at Community Involvement Charter School, investigated the possibilities of a career in the government by working as a volunteer from March through June, supporting both Library and National Environmental Policy Act programs by updating the environmental law section in the BLM Library. Issoufou Ali, a librarian from the AGRHYMET organization in Niger, Africa, worked as a volunteer in the BLM Library to learn about American libraries and to gain experience on library software systems.

Reaching Out to Others

The Bureau of Land Management is dedicated to serving its customers. High-quality customer service is one of the Bureau's highest priorities as it strives to match or exceed the best service available in the private sector.

Professional Commitment to Outreach

Adjunct Faculty Affiliations

Neffra Matthews, Branch Chief of Photogrammetric Applications at the Center, taught a 2-day module during a University of Colorado (Boulder) museum studies summer field course. The title of the course was Basic Methods and New Technologies. Matthew's portion of the course dealt with teaching students how to integrate aerial photography, Global Positioning Systems, and GIS and to locate and describe field collections.

Bruce Van Haveren, Science and Research Advisor at the Center, taught a 2-credit, 1-week short course, Ecology of Lakes and Wetlands, at Sisseton–Wahpeton Community College, a tribally owned college in Sisseton, South Dakota. The Sisseton–Wahpeton Sioux Tribe is responsible for managing tribal lands within the 965,000-acre Lake Traverse Reservation in northeastern South Dakota and southeastern North Dakota. The Reservation has more than 800 glacial lakes and nearly 1,000 ponds and wetlands, constituting a significant ecological and recreational resource and an invaluable outdoor laboratory.

Professional Activities and Recognition

The staff of the National Science and Technology Center is committed to fulfilling the mission of the Bureau—to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. To this end, staff members actively support the Bureau's mission through a multitude of professional activities, from participation in conferences, meetings, and training to researching and preparing publications for use by Bureau personnel and Bureau partners.

Publications

Habich, N. F. 2001. Ecological site inventory. Bureau of Land Management, Technical Reference 1734-7. 111 pp.

Matthews, N. A. 2002. Geospatial support methods used at the Red Gulch Dinosaur Tracksite, Wyoming. Bureau of Land Management, Final Report. 71 pp.

Prichard, D., and B. Ypsilantis. 2002. Riparian–wetland area soil: Discovering the secret of her beauty and the mystery of her soul. Bureau of Land Management, Technical Reference 1737-19. 67 pp.

U.S. Environmental Protection Agency. 2002. On-site wastewater treatment systems manual. [Pat Fleming, contributor, U.S. Bureau of Land Management]

Van Haveren, B. P. 2002. Revisiting the Sheep Creek Barrier Dam, southern Utah, U.S.A. Journal of Hydrology (New Zealand). In press.

Williams, B. 2002. FORVIS (Forest Vegetation Inventory System) User Guide Version 1.1. 254 pp.

Williams, B. 2002. FORVIS Field Guide. 60 pp.

Presentations

Blaszczynski, J. 2002. Terrain Regionalization and Classification Using GIS. ESRI Conference, July 2002, San Diego, California.

Durtsche, B. M., C. McCluskey, R. Falise, and D. Roberts. 2002. Northern Great Plains analysis. The National Wildlife Society Conference, September 2002, Bismark, North Dakota.

Matthews, N. A., T. A. Noble, A. Titus, J. R. Foster, J. A. Smith, B. H. Breithaup, and D. Kett. 2002. Tracking dinosaurs using low-altitude aerial photography at the Twentymile Wash Dinosaur Tracksite, Grand Staircase–Escalante National Monument, Utah. Geological Society of America, Rocky Mountain Regional Meeting, May 2002, Cedar City, Utah.

Matthews, N. A., and B. H. Breithaup. 2001. Tripods and derricks—remote controlled planes and blimps: Vertebrate paleontological photodocumentation in the West. Society of Vertebrate Paleontology Annual Meeting, October 2001, Bozeman, Montana.

Roberts, T. C. 2001. Interagency Plant Materials Center cooperation: Past, present, and future: A Bureau of Land Management perspective.

USDA Natural Resource Conservation Service, Plant Materials Centers Director's Conference, December 2001, Lincoln, Nebraska.

Roberts, T. C. 2002. Research interests and needs in rangeland conservation and restoration: A Bureau of Land Management perspective. USDA Agricultural Research Service Conference, June 2002, Denver, Colorado.

Roberts, T. C. 2002. Rangeland ecology, fire rehabilitation, past, present, and future: A Bureau of Land Management Perspective. USDA Natural Resource Conservation Service, Wildfire Guidance Document Conference, July 2002, Denver, Colorado.

Van Haveren, B. P. 2002. Dependable water supplies from valley alluvium in arid regions. Symposium on Combating Desertification, April 7–10, 2002, Cape Town, South Africa. [poster paper presentation]

Van Haveren, B. P. 2002. The social and institutional dimensions of mountain watersheds: The story of the Beaver Brook Watershed, Colorado, U.S.A. FAO Working Group on Managing Mountain Watersheds, September 16–20, 2002, Davos, Switzerland.

Ypsilantis, W. 2002. Western Regional Cooperative Soil Survey Conference, July 7–12, 2002, Telluride, Colorado.

Staff Contributions to the National Training Cadre, in Coordination with the National Training Center

Map Reading and Field Skills: Lands and Realty Academy, February 2002. Pam Clemmer.

Image Analysis Workshop: GIS National Workshop, April 2002. Pam Clemmer.

Designing Maps for Publications Course, April 2002. C. Smith.

WEPP (Water Erosion Prediction Project): A State-of-the-Science Workshop, April 2002. W. Ypsilantis.

Riparian Proper Functioning Condition Cadre Training, May and August 2002. D. Prichard.

Image Analysis Workshop: Grand Junction Field Office, July 2002. Pam Clemmer.

Photo Interpretation: Riparian Assessment, August 2002. Pam Clemmer.

Aquatic Habitat Restoration and Enhancement Fisheries Course, August 2002. J. Fogg

Using Aerial Photographs to Assess Proper Functioning Condition, August 2002. D. Prichard.

Off-Road Trail Collection: New Mexico State Office, September 2002. Pam Clemmer.

Image Analysis Workshop: Wyoming GIS Workshop, November, 2002. Pam Clemmer.

Stream Dynamics and Channel Design, November 2001. J. Fogg.

Participation in Professional Organizations

Several members of the Information and Communications Staff belong to the National Association of Government Communicators (NAGC). Each year, NAGC sponsors the Blue Pencil/Gold Screen Awards Competition, which recognizes excellence in writing, photography, editorial content, layout and design, film, visual arts, and broadcasting. This year, the Center hosted the judging for the Blue Pencil portion of the competition. The judging was coordinated by the Bureau's Information and Communications Staff Chief, and most of the Information and Communications Staff participated, whether as hosts, judges, or both. A record number of items were entered in this year's competition, and a variety of judges were recruited from Federal, State, and local government agencies; local media; colleges and universities; and private industry. Through this experience, the Information and Communications staff was able to make connections with other professionals, explore partnership opportunities, and compare its products with those produced by other government communicators to get a better idea of what the staff does well and what it could be doing better.

Awards

Jennifer Kapus, Center Graphics Designer, received the Blue Pencil Award from the National Association of Government Communicators (NAGC) for the Bureau's 2001 National Boy Scout Jamboree exhibit, Walk on the Wild Side. As a staff Visual Information Specialist, Kapus worked in collaboration with Center staff and the Bureau's Environmental Education staff to create this entertaining and educational display that informed Jamboree participants about Bureau programs such as paleontology, cultural heritage, invasive plants, and recreation in a maze of information (53 vinyl panels of various sizes). Durable outdoor materials were used to hold up under varying weather conditions. By using in-house services, the Bureau saved tens of thousands of dollars. The award was presented at the Blue Pencil and Gold Screen Awards as part of the NAGC 2002 Communications School held April 3–5, 2002, in Arlington, Virginia.

Tom Busch, Center Lead Architect, was recognized by the Colorado Chapter of the American Society of Landscape Architects for its 2001 Honor and Stewardship Award. Busch coordinated a site analysis study to determine preferred locations for the proposed California National Historic Trails Interpretive Center, which is planned for construction near Elko, Nevada. Many criteria were included in the evaluation to identify the best-suited sites. From this report, Bureau management personnel were able to make an informed decision as to which location would be best for this center.

Looking Toward the Future

The challenge of an agency such as the National Science and Technology Center is to be visionary with regard to emerging trends, needs, and technologies, while meeting the needs of today's land managers. The Center staff welcomes this challenge and strives to meet the demands of today as it investigates emerging science and technology. This is best accomplished through strong partnerships with our customers at all levels of the organization. We are committed to developing and maintaining these partnerships. It is equally important that we build and maintain a strong association with the science providers on whom we depend, both inside and outside the Federal Government. We believe that not only is it critical for Center staff to know where science is being produced, but also for staff to build personal associations with scientists that will assist our customers in meeting their needs. We will continue to build our network with the science and technology community to serve our customers into the future.

As the body of science and knowledge continues to explode, the transfer of information from the research community to the practicing community will be the long-term challenge. The Center continues to investigate means by which this information transfer can be effectively accomplished—initially through participation in collaborative efforts with several of our science providers in government and the academic community. It is important that the Bureau be a key player in developing and implementing these information transfer mechanisms.

The Center's success will continue to be judged by those customers and others who provide the financial resources for it to carry out its mission. The Center staff values customer feedback, and it welcomes present and potential customers to work with it to set an agenda for the future and to keep the Center on a productive track. In striving to be an important part of the solution, the Center's motto continues to be "Helping those who manage the land."

Acronyms

A/E–Architecture and Engineering

ACEC–Area of Critical Environmental Concern

AML–Abandoned Mine Land

ATB–air tanker base

BLM–Bureau of Land Management

BLU–BLM Library Update

CERCLA–Comprehensive Environmental Response, Compensation, and Liability Act

COR–Contracting Officer's Representative

DOQ–digital orthophotoquads

EE/CA–Engineering Evaluation/Cost Analysis

EIS–Environmental Impact Statement

EOS–Electronic Online Systems

EPA–Environmental Protection Agency

ESRI–Environmental Systems Research Institute

FRCC–Fire Regime Condition Class

GABS–Grazing Authorization and Billing System

GIS–geographic information systems

GSENM–Grand Staircase–Escalante National Monument

HVAC–heating, ventilating, and air conditioning

IDIQ–Indefinite Delivery–Indefinite Quantity

IAP–Integrated Activity Plan

LEED–Leadership in Energy and Environmental Design

LTVA–long-term visitor area

NAGC–National Association of Government Communicators

NCA–National Conservation Area

NDEP–National Digital Elevation Program

NDOP–National Digital Orthophoto Program

NEPA–National Environmental Policy Act

NIFC–National Interagency Fire Center

NLCS–National Landscape Conservation System

NSTC–National Science and Technology Center

NTC–National Training Center

OHV–off-highway vehicle

PFC–proper functioning condition

PRP–potentially responsible party

RAS –Rangeland Administration System

RV–recreational vehicle

RVS–Rapid Visual Screening

URI–Universal Resource Identifier

URL–Universal Resource Locator

URN –Universal Resource Name

USDA–United States Department of Agriculture

USFS–United States Forest Service

USFWS–United States Fish and Wildlife Service

USGS–United States Geological Survey

WEPP–Water Erosion Prediction Project

WHB–Wild Horse and Burro

Appendix A. Projects Completed in Fiscal Year 2002

Project Name	Client
Alaska	
Alaska Northern Field Office Support for Mapping Hazardous Waste Sites	Susan Flora
Site Mapping and Hazmat Support for the Umiat Well Closures	Susan Flora
Arizona	
Arizona 100K Mapping (FY 2001)	Carol Burger
Arizona West Zone Aerial Mapping Scoping	Scott Debock
Emerald Isle Removal Site Evaluation	Art Smith
Florida A&M University Cooperative Project (OHV routes)	Bill Gibson
Lake Havasu Recreation Sites (Phase 4)—Deferred Maintenance	Bill Parry
Middle Gila River OHV Route Inventory	Bill Gibson
San Pedro River AML Hazardous Waste Site Verifications	Bill Auby
Water Supply Wells Site Investigations—Yuma	Scott Debock
Well Site Investigations for New Monuments—Arizona Strip	Bob Smith
Wickenburg Fire Station Design	Bruce Beierle
California	
California 100K Mapping	Bill Ming
Imperial Sand Dunes Aerial Photography	Neil Hamada
NIFC GISO/GIST Task Book and Red Card Design for Fire	Victoria Smith
North Zone Coordination Center Dispatch Map	Kevin Dempsey
Presentation of New Evaluation and Cleanup Technologies and Cost Recovery Processes at the BLM California Hazardous Materials Conference	Dick Forester
Rand Mountain Natural Color Aerial Photography	Craig Beck
Spring and Wells Hydrogeologic Assessment	Glen Yamashita
Susanville Interagency Fire Center Digital Dispatch Map	Charles Judd
Water Well Drilling—Cottonwood Campground	Mark Graham
Weed Control Brochures	Mary Lou West

Colorado

Anasazi HVAC System Design . . . . . Stuart Cox
BLM Colorado State Office Watershed Website . . . . . Barbara Hite
BLM–USGS NLCS Science Partnership Web Site for Colorado NLCS Lands . . . . . Scott Davis
Close-range Photogrammetric Support . . . . . Dan Grenard
FORVIS Install—Colorado . . . . . Jim Cunio
Grand Junction Mancos Shale Workshop . . . . . Scott Davis
Image Processing Technical Support . . . . . Ken Schauer
Kremmling—OHV Routes . . . . . John Arkins
Lake Fork Large Scale Mapping—Technology Evaluation . . . . . Dan Grenard
Lookout Mountain—Telecom Site Map . . . . . Gordon Gardunio
Montrose Field Office Engineering Site Design Map . . . . . Gordon Gardunio
Monument Peak Telecom Site . . . . . Gordon Gardunio
Rocky Mountain Coordination Center GIS Work . . . . . Tim Mathewson
Survey of Calamity Mine Historic Structures . . . . . Carl Barna
Technical Climate and Air Quality Oversight on the Southern Ute Indian Tribe Environmental Impact Statement . . . . . Jim Rhett
Tracer Injection Study and Audit Characterization for the Lake Fork of the Arkansas River . . . . . Dan Grenard
Transfer Trail Road Realignment Topographic Map . . . . . Gordon Gardunio
Ute Ulay Mill Removal Site Evaluation and Engineering Evaluation/Cost Analysis (AML) . . . . . Barbara Hite
Value Engineering Study for Grand Junction Air Tanker Base . . . . . Stuart Cox
Villa Grove Water Well Site Investigation . . . . . Mark Swinney
Wetland Delineation in the South Park and North Park Areas of Colorado Using Landsat Satellite Imagery . . . . . Roy Smith

Eastern States

Eastern States Folder . . . . . Peggy Riek
Eastern States Vantage Annual Report . . . . . Peggy Riek
Meadowood Farm—Water System Design . . . . . Charles Bush

Idaho

Burley Fire Office Design . . . . . Gary Stevens
Idaho Bridge Inspections . . . . . Gary Stevens
Inspection of Superstructure for Herd Creek Trail Bridge . . . . . Steve Frazee
Upper Snake River Color-infrared Aerial Photography . . . . . Deena Teel
Well Site Evaluations in Southern Idaho . . . . . Neil Norman

Montana

Decision Point Recreation Site Maps . . . . . .Carl Patten
FORVIS Install—Montana . . . . . .Bill Hensley
Montana 100K Mapping (FY 2001) . . . . . .Corla DeBar
NRDAR (Natural Resource Damage Assessment and Restoration)
Support—Whitewood Creek Settlement Activities . . . . . .Peter Bierbach

Nevada

Battle Mountain Value Analysis . . . . . .Dave Davis
Caliente Field Station Redevelopment Design . . . . . .Mike Fewell
Calico I and II Overlooks Topographic Map . . . . . .Robert Taylor
Coyote Valley Ground Water Supply . . . . . .Bill Brookes
Eagle 1 Mill Site Geophysical Investigation . . . . . .Joel Mur
Las Vegas Field Office Assistance Regarding Air Quality
Associated with Lands Actions . . . . . .Rex Wells
Oliver Ranch Site Development Planning (Red Rock Canyon Conservation Area) . . . . .Bob Dunn
Osage Removal Site Evaluation . . . . . .Mike Moran
Red Rock NCA Loop Road Parking Site Maps . . . . . .Tim O'Brien
Rip Van Winkel Site Evaluation and Engineering Evaluation/Cost Analysis (AML) . . . .Deb McFarlane
Sandstone Quarry Topographic Map . . . . . .Robert Taylor
Susie Creek Bridge Replacement . . . . . .Norman Rockwell

New Mexico

Farmington Field Office—Mechanical and Electrical Engineering Support . . . . . .Steve Jordan
New Mexico 100K Mapping (FY 2001) . . . . . .Greg Homan
Public Lands Trek Presentation to the National Geographic Society . . . . . .Dave Mensing

Oregon

Accelerating Cooperative Riparian Restoration and Management . . . . . .Wayne Elmore
Cost Recovery Support for the Umpqua Mine Site . . . . . .Eric Heenan
Glass Buttes Mercury Mine Remedial PA and Removal Action . . . . . .Terri Geisler
Glass Buttes Mercury Mine Removal Site Evaluation and Removal Plan . . . . . .Terri Geisler
Middle Deschutes–Lower Crooked River Flow Assessment . . . . . .Michelle McSwain
Nighthawk Removal Action . . . . . .Jake Jakabosky
Umpqua Mine (AML) Cleanup Design and Specifications . . . . . .Eric Heenan
Water Quality and Hydrology Support . . . . . .Chester Novak

Utah

Cannonville Visitor Center Construction Management . . . . . Casey Matthews
Cedar City ATB Operations Building—Inspection . . . . . Eric Mullins
Crescent Wash Dam Topographic Map . . . . . John Lewis
Escalante Science Center—Value Analysis . . . . . Casey Matthews
Influence of Management Activities on Two Bighorn Populations . . . . . Joe Cresto
Kanab Administrative Office—Building and Site Assessment . . . . . Rex Smart
Manning Canyon AML Design—BOR Oversight (AML) . . . . . Jack Brown
Sediment Dam Stabilization . . . . . Ann Marie Aubry
Tenmile Wash Topographic Map . . . . . John Lewis
Utah Water–Riparian GIS Database . . . . . Heidi Hadley
Watershed Assessment for Community Water Well . . . . . Phil Zieg
White House Road and Campground Site Map . . . . . Bryce Lloyd

Washington Office

100K Automated Mapping Development . . . . . Ed Harne
Abandoned Mine Lands Strategic Plan . . . . . George Stone
Aerial Photo Assistance . . . . . Ed Harne
Biological Soil Crust Inventory Protocol . . . . . Steve Borchard
BLM Annual Performance Plan 2001 . . . . . Janine Velasco
BLM Bridge Safety Lead . . . . . Linda Force
BLM Computer-aided Design Standards Update . . . . . Bernie Hyde
BLM NRDAR Case Screening and Initiation . . . . . Nancy Dean
BLM Volunteer Annual Report . . . . . Elizabeth Wooster
BLM: The Open Space Agency Brochure . . . . . Peter Mali
Bureau Climate Liaison . . . . . Tim Reuwsaat
Bureau Wide Air Quality Liaison . . . . . Tim Reuwsaat
Cost Recovery and Enforcement Policy Development and Support . . . . . Nancy Dean
Cultural Heritage Program Strategic Plan . . . . . Richard Brook
Data Management Planning . . . . . Gary Stuckey
Discovering Dinosaurs Educator's Guide . . . . . Elizabeth Rieben
DOI Restoration Program Work Group . . . . . Nancy Dean
Ecological Site Technical Reference . . . . . Dick Mayberry
Engineering Advisory Team . . . . . Bernie Hyde
Environmental Education Office Web Site Redesign . . . . . Mary Tisdale
Evaluate and Research BLM Global Fiducial Sites . . . . . Ed Harne
Evaluation of Web-based Health and Safety Training for
Hazardous Waste Operations at Hazardous Waste Sites . . . . . Andrea McLaughlin
Federal Interagency Sedimentation Project . . . . . Eric Janes
Field Office and State Office Annual Health, Safety, and Awareness
Training for Hazardous Waste Site Operations . . . . . Nancy Dean
FLPMA 25-Year Commemoration Poster and Publication . . . . . Jeff Krauss
Forestry Forms Coordination . . . . . John Stewart

Washington Office *(continued)*

FORVIS 2002 . . . . . Rick Tholen
FY 2003 Budget Focus Areas . . . . . Mike Mottice
Hazmat and Environmental Contract Support . . . . . Nancy Dean
Helium Resources of the US—2001, Technical Note 408 . . . . . Brent Gage
Indian Mineral Owners Quick Reference . . . . . Bob Anderson
Interagency Geographic Sciences Coordination . . . . . Ed Harne
Junior Explorers Educator's Guide and Logo . . . . . Mary Tisdale
Management of BLM Aerial Photo Archive and Lab . . . . . Ed Harne
Management of Interagency Printing Activities . . . . . Ed Harne
Management of the BLM Satellite Archive . . . . . Ed Harne
Map Standards Workgroup . . . . . Ed Harne
Micrographic Support . . . . . Don Buhler
National Digital Elevation Program Technical Subcommittee . . . . . Ed Harne
National Fire Plan Assistance . . . . . Tim Hartzell
National Public Lands Day Poster and Brochures . . . . . Mary Tisdale
NCSS (Number Cruncher Statistical System) Technical Liaison . . . . . Steve Borchard
NRDAR Program Coordination for BLM . . . . . Nancy Dean
NT FORVIS User Interface Development . . . . . Rick Tholen
Preparation of NCP Removal Document Examples for Hazmat Web Site . . . . . Nancy Dean
Presentation at BLM AML Conference . . . . . George Stone
Public Affairs Folder for Brochures . . . . . Jeff Krauss
Rangeland GIS with Extensions . . . . . Tim Reuwsaat
ReGAP Cooperative Vegetation Mapping . . . . . Tim Hartzell
Remote Sensing Applications for Range Health Report . . . . . Tim Reuwsaat
Represent the BLM on IMPROVE, NADP, and WESTAR . . . . . Tim Reuwsaat
Roads Program Support . . . . . Bernie Hyde
Seeds of Success Logo . . . . . Carol Spurrier
Seismic Safety in BLM Buildings . . . . . Linda Force
Soil Biological Communities Website . . . . . Steve Borchard
Support the IT–RMLUP BLM Project . . . . . Pat Green
Sustainability Program . . . . . Linda Force
Sustainable Development and Its Influence on
Mining Operations on Federal Lands Pamphlet . . . . . Bob Anderson
The BLM in Pictures: Images from the Public Lands Postcards . . . . . Jeff Krauss
They Walked Here Long Ago Dinosaur Track Brochure . . . . . Jeff Krauss
Unexploded Ordnance—Handbook 1703-2 for Land Managers . . . . . Andrea McLaughlin
University of Wyoming Recreation Research . . . . . Loren Cabe
Vegetation/Land Cover Mapping Coordination and Support . . . . . Cal McCluskey
Watershed Initiatives and Salinity Control . . . . . Eric Janes
Watershed Modeling Conference . . . . . Eric Janes
Wild Horse and Burro System User Representative . . . . . John Fend
Wildlife Review and Priority Setting . . . . . Cal McCluskey
WO-230 Technical Support and Interagency Coordination . . . . . John Stewart

Wyoming

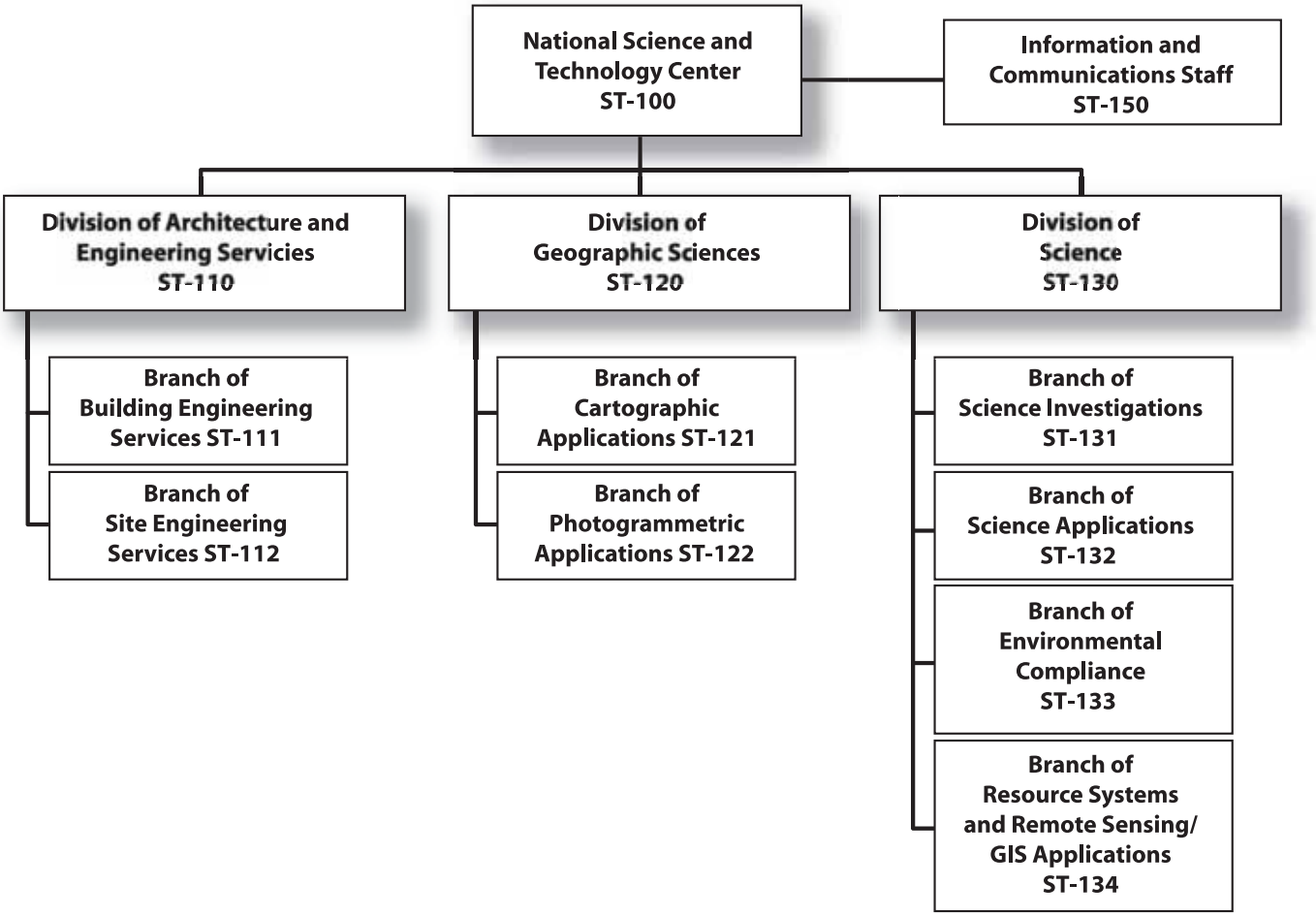
National Business Center

National Human Resources Management Center

National Interagency Fire Center

National Training Center

Appendix B. National Science and Technology Center Organization



National Science and Technology Center (ST-100)

Lee Barkow – Director
Michael Kirby – Associate Director
Rheda Dodd – Executive Assistant

Louise Ecoff – Business Manager
Carol Giffin – USGS Employee/Liaison

Division of Architecture and Engineering Services (ST-110)

Robert Hart – Division Chief
Deanna Miller – Secretary

Scott Hansen – Special Projects Coordinator
Russ Virgin – Construction Manager

Branch of Building Engineering Services (ST-111)

Thomas Busch – Branch Chief

Frank Ciesel – Architect
John Emrick – Architect
Phillip Luu – Structural Engineer
Ernest Parrott – Architect
ChanhTran – Mechanical Engineer
Sue Weber – Engineering Technician
Young Yu – Electrical Engineer
Vacant – Engineering Technician
Vacant – Specification/IT Coordinator

Branch of Site Engineering Services (ST-112)

Patrick Fleming – Branch Chief

Keith Christiansen – Structural Engineer
Gary Fisk – Structural Engineer
Mary Anne Nelson – Civil Engineer
Mark Pritchett – Landscape Architect
Tanya Pardy – Civil Engineer
Elizabeth Smith – Structural Engineer
Vacant – Engineering Technician

Division of Geographic Sciences (ST-120)

Fred Batson – Division Chief
Debra Kurtz – Secretary

Branch of Cartographic Applications (ST-121)

William Jackson – Branch Chief

Neal Anderson – Cartographic Quality Control
Faye Bogan – Cartographic Lab Specialist
Donald Decicco – Cartographer
Susan Derr – Cartographic Technician
Keith Francis – Cartographic Development Specialist
Mary Ann Guinea – Cartographer
Daniel Sedillo – Cartographic Technician
Chris Smith – Cartographic Development Specialist

Branch of Photogrammetric Applications (ST-122)

Neffra Matthews – Branch Chief

Lawrence Cunningham – Aerial Photo Acquisition Coordinator
Paul Graves – Photogrammetrist
Russell Jackson – Photogrammetrist
David Kett – Photogrammetrist
Michael Marchase – Photogrammetrist
Tom Noble – Cartographer-Data Management
Nancy Russell – Photogrammetrist
Constance Slusser – Aerial Photo Archivist
Betty Wilson – Photo Lab Specialist

Division of Science (ST-130)

Charisse Sydoriak – Division Chief
Vida Jenkins – Secretary
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